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THE

ENTOMOLOGIST'S MONTHLY MAGAZINE:

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> "Ye heathy wastes, inmixed with reedy fens;
> Ye mossy streams, with sedge and rushes stor'd;
> Ye rugged cliffs o'erhanging dreary glens,
> To you I fly, ye with my soul accord."
>
> *Robert Burns.*

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OBITUARY AND REVIEWS.

These notices are now incorporated in the GENERAL INDEX, under their respective headings, which plan will be followed in future.

N.B.—There are other departures from the system of Index used in the First Series, the principal of which is the omission of the Index to the Proceedings of the Entomological Society of London, the utility of which has long become obsolete, all Fellows of the Society now receiving its publications free of charge.

ERRATA.

Page	52,	line	25	from	top,	for “white dorsal lines” read “rows of white dots.”
„	101,	„	19	„	bottom,	„ “Dachal” read “Vachal.”
„	109,	„	13	„	top,	„ “*Sciara*” read “*Leia.*”
„	164,	„	8	„	bottom,	„ “*signis*” read “*segnis.*”
„	189,	„	19	„	top,	„ “*Macrabia*” read “*Macratria.*”
„	199,	„	21	„	„	„ “*maxillorus*” read “*maxillosus.*”
„	236,	„	2	„	„	„ “*Molonna*” read “*Molanna.*”
„	258,	„	7	„	bottom,	„ “*Pœliconota*” read “*Pœcilonota.*”
„	260,	„	9	„	„	„ “*Trechyscelis*” read “*Trachyscelis.*”
„	273,	„	3	„	„	„ “Erkrall” read “Erkrath.”
„	294,	„	14	„	top,	after “Bull. Soc. Ent. Fr.,” insert “1874.”

THE

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SECOND SERIES—VOL. I.

[VOLUME XXVI.]

MICROPTERYX LARVÆ.

BY JOHN H. WOOD, M.B.

Nearly thirty years ago, in the "Annual" for 1862, there were published some excellent notes on the natural history of the *Micropteryges*, in which several of the species were more or less fully and accurately described. Yet the very excellence of the beginning then made seems to have acted as a deterrent, and sent observers into fresher fields, so that little if anything has since been added to our knowledge of them, and it has become quite time that a further chapter in their history should be written.

My own observations extend to just half-a-dozen species; but before describing them individually, I will, to save needless repetition, say something of the general characteristics and habits of a *Micropteryx* larva. I may premise that they are most easy things to study, for, by removing all but the mined leaf from the spray, the latter may be kept in water fresh to the last, and so the whole larval history from beginning to end be accurately watched. All the species hereafter mentioned, with the exception of *purpurella*, lay their eggs singly; yet, like Mr. Douglas (*op. cit.*, p. 126), I have failed to find any trace of the egg itself, though I have carefully sought for it over and over again, and in instances too where the larva could have been hatched little more than twenty-four hours. That the egg is laid at the point where the larva enters I have little doubt, but whether the empty shell scales off, or furnishes the larva with its first meal, or is present all the while and wants better eyes to see it, I cannot say. The first explanation may be the right one, as there is always at the point of entrance some tearing and contraction of the cuticle, and even of the whole thickness of the leaf when the mine happens to start near the edge. All of them enter from the under-side; those that commence to feed very early in the year begin close to the edge of the leaf, as this is the part the parent insect can best reach when laying her egg in the just opening bud, while *salopiella* and *Sparmannella,* that are later in both the perfect and preparatory stages, enter more in the body of the leaf. The last-named two also commence with a long *Nepticula*-like gallery, whereas, in the others that enter near the edge, the gallery is so short and twisting as practically to be non-existent.

The larvæ grow rapidly, and change their skins three times, the moulting period being known by the withdrawal of the creature from the margin of its mine. They are tough skinned larvæ, stiff and clumsy looking, with stout thoracic and slender abdominal segments, deeply incised; and when in their mines, where the details of their structure cannot be ascertained, they bear a striking resemblance to certain footless Coleopterous larvæ, the resemblance extending even to the thread-like form of the frass. In the summer of 1888 I found in elm leaves deserted mines full of thread-like frass, which, in my then ignorance, I unhesitatingly ascribed to a *Micropteryx,* but repeated search this year having failed to confirm the conclusion, I am now disposed to think they were merely the work of one of those beetles, that are often abundant on the elm in early spring.

But to return to our *Micropteryx.* The head is very small, flat, and pointed; its posterior lobes are prolonged backwards to an excessive degree, making the notch at the back of the head very wide and deep. This development of the lobes is present in all mining larvæ, and affords a powerful leverage to the muscles that move the head from side to side, which is the movement these larvæ employ in feeding instead of the usual up and down one of external feeders. Segment two is much wider than the head, and overlaps it; it is shallow in front, and deep behind where it joins segment three. Segments three and four are about as wide as segment two, and very massive; instead of being cylindrical in section, each is roughly square, in consequence of a mammilla-like development in the subdorsal and supraventral regions, each mammilla being tipped with a papilla, which can be protruded or retracted at the will of the animal. The object of this remarkable configuration is, I believe, to give a secure foothold whilst the animal is feeding at the edge of its hollow or balloon-like mine; and in support of this explanation is the fact, that a very similar formation of these segments is present in at least one or two other Lepidopterous larvæ, in which the conditions are also similar. The abdominal segments are cylindrical, and terminate behind in a fine styliform extremity. Segment five is provided with a pair of lateral protuberances, of little or no use apparently, except perhaps to serve as the distinctive mark of a *Micropteryx* larva, for the benefit of the naturalist.

Such are the characters of the mature larva, and with one exception they are equally true of the immature one. In the former, as has already been shown, the three thoracic segments are of equal width, but in the latter or immature larvæ this equality does not obtain, segment two being now distinctly wider than either of the others, and consequently the widest segment in the body. This preponderance of segment two is, I believe, characteristic of all mining larvæ that form blotches, so long at least as the blotch remains flat, and does not become hollow or balloon-like; but as soon as the blotch-life is over, as happens half-way in the life of the *Gracilariidæ*, or the blotch becomes hollow and capacious, as in the later life of the *Lithocolletes*, then segment two loses its superiority, and may even become narrower than the following segment. This being the principle underlying the development of segment two, we find, as might be expected, that the superiority of segment two is lost early, namely, at the time of the second moult, in those *Micropteryges* in which the mine from starting near the edge quickly becomes balloon-like, whilst it is retained up to and even beyond the last moult in *Sparmannella* and *salopiella*, where, from its position in the middle of the leaf, the mine remains flat and shallow until the last few days of rapid excavation.

I now come to the individual larvæ, and will take together three species with exactly similar habits, that begin to feed very early in the year, at the end of April or the beginning of May, before the birch leaves are fully grown. They are *unimaculella*, *semipurpurella*, and what is probably a new species, which I will call provisionally *inconspicuella*, from the inconspicuousness of the anal wing-spot in the perfect insect. All start from the edge of the leaf with a short twisting gallery, that is soon lost in the after-formed blotch.

1st skin—whitish, with black heads and brown mouth parts; indistinguishable from each other.

2nd skin—all develop a large oblong black mark on both the upper and under-sides of segment two.

3rd skin—their differences now appear: *unimaculella* develops its black abdominal spots, though sometimes they make their appearance in the previous skin; *semipurpurella* becomes dark grey; and *inconspicuella* slightly smoky, but the depth of the tint varies, and is best recognised in the shrivelled skin shed at the next moult.

4th and last skin—*unimaculella*, the black abdominal spots and the marks on segment two have disappeared; head brown with the mouth parts darker, but the posterior margins and lobes still blackish, the latter appearing as a pair of dark spots under segment two; in addition to the protuberances on segment five are smaller ones on segment six: *semipurpurella*, still grey, but not so dark as in previous skin; head also still black, with the exception of the centre, which is now brown like the mouth; the black marks on segment two in progress of disintegration, and broken up into irregular black spots: *inconspicuella* whitish, the smoky tint quite gone; head very pale ochreous-brown, with darker mouth parts; no trace of the black marks on segment two, but in their place a slight ochreous tint. In this skin it comes nearest to *unimaculella*, but may be known, when in the mine, by the absence of the pair of dark spots at the back of the head; whereas, in the previous skin, its resemblance was to *semipurpurella*, for very pallid specimens of which it has, I suspect, been mistaken by collectors. The mine of *semipurpurella* is browner than that of either of the others, and shows only a very narrow greenish border at its advancing edge.

Purpurella, an early larva like the foregoing, occupying mines that differ in no respect from theirs, except in being of a greener tint. It is sometimes solitary, but usually two or three are together, feeding side by side in most brotherly fashion. Occasionally I have seen as many as six in a mine, but they were probably the produce of more than one laying. In the first skin it is greenish-white, the head watery-white, with just a tinge of brown about the mouth. Little change takes place in subsequent moults, and it remains to the last a very delicate looking larva, of a watery-white colour; with the head concolorous, the eye-spots black, and the mouth pale brown. From this absence of colour, as well as from the imperfect way in which at first it removes the parenchyma, it is very difficult to see it in its mine, even when full grown, and quite impossible when young. Besides the protuberance on segment five, it is furnished with small projections on each of the other abdominal segments, except twelve and thirteen, which give it a prickly appearance.

I now come to a species on nut (*Corylus avellana*), for which Mr. Stainton proposes the name of *Kaltenbachii.* The moth bears a striking resemblance to *purpurella,* and but for the longer antennæ, it would be hard to tell it from that insect. The larva is, however, altogether different. It is an early species, beginning to feed before the nut leaves are fully expanded, and sets to work on its blotch with very little of a preliminary gallery. The larva is at first an exact copy of those of the *unimaculella* group.

1st skin—whitish, with black head. 2nd skin—the black marks on segment two appear. 3rd skin—little change noticeable; the larva looks rather yellowish in the mine, but this appears to be the effect partly of the colour of the mine itself, and partly of the greenish-yellow contents of the intestine, the colour of the skin being really whitish. 4th skin—head pale brown, with darker mouth; a slight tinge of grey, especially posteriorly, represents what remains of the black mark on the upper-side of segment two, that on the under-side is broken up into a pair of large dark grey spots, which gives the larva the very same look that the dark posterior lobes give *unimaculella.* It is furnished like *purpurella* with small abdominal projections, but more minute.

Salopiella and *Sparmannella.*—The first begins to mine the birch leaves about the middle of May, a full fortnight later than the early feeders, which has allowed the leaves to acquire their full size *Sparmannella* is still later, and does not make its appearance till the middle or end of June. Each commences with a long, narrow, *Nepticula*-like gallery, which, from the persistence of the line of black frass, remains permanently visible. This portion is the work of the larva in the first skin. Next comes a small dark brown blotch, representing the second and third larval skins. In *salopiella* the blotch is pear-shaped, due to the larva turning abruptly round at the end of the gallery: in *Sparmannella* it is rectangular, from the larva turning off its gallery at right angles. This is the only point that distinguishes their mines, and trivial though the difference be, it is remarkable how constant it is. Lastly, and representing the fourth and last skin of the larva, is the usual wide spreading mine of a *Micropteryx,* which often surrounds and encloses the primary blotch; yet the latter being of a much darker colour remains clearly mapped out, and will generally serve, long after the larva has left, to determine to which species the mine belongs.

Larva of *salopiella*: 1st skin—whitish, with black head. 2nd skin—slightly grey or smoky; head black; the usual black marks on second segment appear, as well as a series of large square-shaped grey marks on the under-side of the other segments, except thirteen. In the mine it looks nearly black, from the chain of spots and the full dark intestine. 3rd skin—now more distinctly grey, yet the head has faded to a pale brown, tinted with a little grey at its sides; the black mark on the dorsum of segment two gone, that on the centre remains; the chain of ventral spots has grown into a broad smoky-black band, interrupted at the divisions. 4th skin—whitish, the grey shade quite gone, as also the ventral band; head pale brown; anterior edge of segment two on both aspects tinted with brown.

Larva of *Sparmannella*: 1st skin—watery-white, with a very pale brown head; almost invisible in mine. 2nd skin—sides and under-parts of head begin to acquire a grey tinge; still very indistinct in mine. 3rd skin—more whitish and less watery looking; head continues to gain colour, otherwise no change. 4th skin—whitish; head brown, with blackish sides; the under-parts of the posterior lobes plainly visible through segment two as a pair of large black spots; the marks on segment two, so common in the genus, appear now for the first time, but are poorly developed, being little more than outlined in brown. The steady gain in colour from moult to moult in *Sparmannella* is very striking; in *purpurella* also the change, what little there is, is in the same direction, but in the others, as in Micro larvæ generally, there is gain for a time only, and then sets in a decline.

It will be seen that all the species described belong to the group in which, in the perfect insect, the ground colour of the wings is irrorated with another colour, and the markings take the form of spots, but of the natural history of the other group, in which the irroration is wanting and the markings are fasciæ, I have not a scrap of information, although all the species, with the exception of *aruncella*, occur in the neighbourhood. So far they seem to have eluded discovery by every one, and when we do light upon them, they will probably be found to differ considerably both in habits and form from our present conception of a *Micropteryx* larva.

Tarrington, Ledbury:
October 11*th*, 1889.

SCOPARIA ATOMALIS.

BY EUSTACE R. BANKES, M.A., F.E.S.

Owing to the kindness of my friend Mr. Samuel T. Ellison, of Perth, I have just had the long-wished-for chance of examining a most interesting series of this so-called species from various localities in Perthshire, and have been able at last to form a definite opinion on the vexed question as to the true relations between *S. ambigualis* and *S. atomalis*. The series contained some very small dark extreme forms of the latter, and these were connected by every possible shade of variety, with larger and lighter specimens, which were identical with small southern *ambigualis*: some were so exactly intermediate between the two extremes, both in colour, size, and markings, that it was quite impossible to say to which species (?) they should be referred. These *intermediate links* seem to prove conclusively that *atomalis* is, as has for some time past seemed probable, merely the small dark highland form of the well-known *ambigualis*; and a careful examination failed to reveal any genuine characters by which any portion of the series could be separated from the rest. The *extremes*, it is true, when compared together *without the connecting links*, may look distinct, but the gap between them is not nearly so wide as between the extremes of such very variable species as *S. mercurella* and *S. dubitalis*.

In order to enable me more fully to investigate the matter, Mr. Philip B. Mason has kindly lent me tracings of highly magnified drawings of the anal appendages, with their constituent parts, of all the *Scopariæ*; the differences shown between the appendages of *S. ambigualis* and *atomalis* are very slight, and would be easily accounted for, if, as was probably the case, the drawings had been made from dried specimens.

There can then, I think, be no longer any doubt that *S. atomalis* must for the future lose its specific rank, and the name be retained for the small dark highland variety of *S. ambigualis*.

Seeing that *conspicualis* and *gracilalis* have now been merged into *ulmella* and *alpina* respectively, while *Zelleri*, *scotica*, *ingratella*, *portlandica*, and *atomalis* have been degraded from specific rank into their proper places as varieties, and *phæoleuca* has disappeared altogether from our list, the genus *Scoparia*, as represented in Britain, seems at length to have been reduced to its natural limits. The only possible species about which there can still be any question is *S. basistrigalis*, which some think may prove to be identical with *S. ambigualis*; I regret to say that I am not sufficiently well acquainted with it to form any opinion on the matter. Mr. C. A. Briggs has suggested, in the "Entomologist," xxii, p. 17, that *S. cratægella* is, perhaps, only a *local chalk form* of *S. mercurella*, but it is difficult to understand how such an idea could be seriously entertained, as these two species, though nearly allied and so often confused together, are in reality abundantly distinct, none of the numberless varieties of *mercurella* ever showing the peculiar characters of *cratægella*.

The Rectory, Corfe Castle:
November 30th, 1889.

Scoparia angustea.—With regard to the question raised in Ent. Mo. Mag., xxii, pp. 42, 209, as to whether *Scoparia angustea* usually has one or two broods in the year on the south coast, my experience tends to show that in this district, as at Worthing, the species is, as a rule, only single-brooded, but occasionally, under the most favourable conditions, it is, perhaps, *partially* double-brooded, but only to a *very* limited extent. A single fresh-looking specimen taken on our coast on June 21st of this year is the only example of a summer brood that I have ever met with, and, though the insect is common at Portland, Mr. Nelson M. Richardson tells me that he has seen no sign of an early brood there. The regular time of its appearance with us is about the middle of September, and from then till the middle of October it is in full swing; whereas, Mr. Porritt mentions the end of July and beginning of August as the dates of its emergence at Huddersfield! Can any one explain the mystery?—Id.

[I met with this insect in 1879 at Tunbridge Wells, September 6th, 7th, and 8th; it was then just out.—H. T. S.]

Opostega salaciella.—After having been on the look-out for several years, during which time I had met with four solitary specimens, I, at length, in the middle of last June, hit upon a good locality for *O. salaciella*, and took a long and beautiful series. They fly among beds of *Rumex acetosella*, from about 7 to 8 p.m., and are very conspicuous, owing to their white colour. Even on the most favourable evening one may work over the ground with great care for some minutes without seeing a sign of the insect, when all in a moment one notices the males hurrying up in the same direction by short flights through the grass-stems, and becomes aware that a virgin female must be in the herbage at one's feet. For a minute or two, as one kneels down, one fancies oneself in the thick of a miniature snowstorm, and it is impossible to box the moths fast enough; but, as soon as the fair lady has paired, the fun is over, and all the males disappear as suddenly as they had appeared! A fair proportion of those I took had the yellow fascia towards the hind-margin of the fore-wings, which is given in Ent. Ann., 1868, p. 131, as the characteristic distinction of *Opostega reliquella*, but I am fully convinced that the so-called *reliquella* is simply a variety of *salaciella*. The yellow fascia appears to gradually fade away after death, and some of my specimens seem to have already lost almost all trace of it. I am in great hopes of meeting with the *long-sought-for* larva of this species next season.—Id.

COLEOPTERA AT COBHAM PARK, KENT.

BY J. J. WALKER, R.N., F.E.S.

During the past summer a welcome spell of half-pay, and its accompanying leisure, has enabled me to work up my favourite old hunting-ground, Cobham Park—whence so many good beetles have been recorded by me in the past volumes of this Magazine—with some degree of thoroughness. The result has been, on the whole, very satisfactory, and I think the list of *Coleoptera* enumerated below (some of which have also been taken by Dr. Sharp and Mr. G. C. Champion in my company) will show that the Park is inferior to few, if any, localities in the London district.

The profusion of magnificent old timber in the Park—the oaks, chestnuts, maples, and especially the hornbeam and ash trees, being the finest and largest I have seen in any part of England—would appear, at first sight, to promise an unusual wealth of xylophagous *Coleoptera*, but the true wood-feeders can only be said to be moderately well represented. Many of the trees exhibit signs of decay in a greater or less degree, and bear evident traces of the presence of *Melasis*, *Ptilinus*, *Priobium*, *Anobium*, and *Rhyncolus*; the first two being apparently confined to beech and hornbeam, while the others are more general in their tastes. The thick bark of the huge ash trees is often perforated by numbers of *Hylesinus crenatus*, which is sometimes to be found crawling lazily on the trunks, but is usually not so easy to secure, as it is more often seen sitting at the mouth of its burrow with its hinder part outwards, ready to retreat beyond the reach of the bark-knife on the slightest alarm. *Melasis* has precisely the same habit, while that of *Ptilinus* and *Priobium* is the reverse, these being always found in their burrows with their heads outwards. *Hylesinus oleiperda*, which is not unfrequently taken by sweeping, has not yet been found "at home;" it probably lives in the smaller boughs of the ash trees, high up out of reach. Of the Longicornes, I found *Prionus coriarius* (several), *Liopus nebulosus* (not rare), *Pachyta collaris*, and *Leptura scutellata*, the last being found in the big hornbeam tree affected by *Abdera 4-fasciata*. *Soronia punctatissima*, and both species of *Cryptarcha*, occurred sparingly in a *Cossus*-infested oak, and *Cissophagus hederæ* was once beaten out of old ivy, along with *Ochina*, in fair numbers.

There is not so much felled timber left lying about the Park as was formerly the case, and especially did I regret the removal, long ago, of the grand old prostrate beech tree, which, for years, yielded me such a harvest of good beetles. This year there happened to be several fine oaks, newly felled and stripped of their bark; crawling on these, towards evening, I found, amongst others, *Pediacus dermestoides* (3), *Xylotrogus brunneus*, and *Xylophilus oculatus*, the last also in very dry and rotten oak wood, and by sweeping. Under bark of standing and partly decayed beech trees, *Bythinus Curtisii*, *Endomychus coccineus*, *Cerylon ferrugineum*, *Orchesia undulata*, &c., were found more or less commonly, and one specimen of the very rare *Philonthus fuscus*, Grav., was taken on August 28th, under a loose flake of hornbeam bark.

Dead boughs, sticks, and logs, lying on the ground among leaves (especially when they had fungoid growth about them), were always worth examining. They yielded *Notiophilus rufipes*, *Calathus piceus*, *Bolitochara lucida* and *bella* not rarely, *Conosoma littoreum* and *immaculatum*, *Homalium nigriceps*, *Scydmænus Sparshalli*, *Liodes orbicularis* (not rare) and *humeralis*, *Agathidium varians* and *rotundatum*, *Amphicyllis globus*, *Scaphisoma boleti*, *Cerylon fagi*, *Cryptophagus ruficornis* (in some numbers, in a fungoid growth on the under-side of an ash log; also obtained by crumbling decayed ash wood over paper, and accompanied by *Leptusa ruficollis*, it was also taken by evening sweeping); *Mycetophagus piceus*, *Cis alni*, *Scaphidema ænea*, and very many others.

The larger tree-fungi yielded, besides the ordinary run of common things, *Cis bidentatus*, *pygmæus* and *festivus*, *Dorcatoma flavicornis* and *Orchesia micans*; and when decayed, *Haploglossa pulla* (probably accidental), *Quedius fulgidus* and *cruentus*, *Philonthus succicola*, *Leistotrophus nebulosus* (common), *Megarthrus hemipterus*, &c. In a large dry *Boletus*, almost like a biscuit in texture, *Eledona agaricicola* occurred in large numbers.

By piling up a heap of hard fungus as a trap, at the root of the big ash tree where, in June last, I found *Abræus granulum*, I managed, in repeated visits, to obtain a good series of this little rarity, besides attracting hordes of *Dorcus* and other more common beetles. The same trap yielded, in August, the beautiful *Eros minutus*, afterwards taken in some numbers crawling on the lower part of the tree-trunk on damp evenings, its brilliant scarlet and black livery contrasting finely with the green moss which clothed the bark. It had evidently been bred in a decayed place near the root of the tree, as some of the specimens were immature; and I also found a few on another somewhat decayed ash tree, about a stone's-throw distant from the first. As usual, the ♂ was more numerous than the ♀, in the proportion of about six to one.

General sweeping, when the weather was really suitable—which, I am bound to say, was not very often the case—was always very productive. Among the host of species obtained in this way, I may mention *Hypocyptus seminulum* (in abundance just before sunset in

August), *Mycetoporus clavicornis*; *Stenus ater*, *Homalium iopterum* and *pygmæum*, *Proteinus atomarius*; *Anisotoma cinnamomea* and *grandis* (both scarce), *ovalis* (flying), *litura*, *badia*, *parvula* (not rare) and *calcarata*; the last common and most variable, and often like *Colon brunneum*, also frequent, raising wild hopes of something very much better. *Cyrtusa pauxilla*, *Colenis dentipes*, and *Hydnobius strigosus*, all three not rare; *Agaricophagus cephalotes*, occasional. *Scydmænus longicollis*, Mots. (*præteritus*, Rye), *Euthia plicata*, *Euplectus Kunzei*, *Trichonyx sulcicollis* (1); *Thalycra sericea*, seven examples in all, invariably occurring singly just before sunset. *Micruria melanocephala* (also in profusion by beating maple blossom at the end of May), *Brachypterus gravidus*, *Meligethes umbrosus*, *solidus*, and others; *Silvanus surinamensis*, several (a curious sight in the sweeping-net), *Cryptophagus pubescens* and *setulosus*, the last also abundant in a humble bee's nest; *Cænoscelis ferruginea*, *Syncalypta hirsuta*, *Aspidophorus orbiculatus*, *Aphodius arenarius*, *Serica brunnea*, and *Hoplia philanthus*; *Trox scaber*, on the wing; *Agrilus angustulus* and *laticornis*, both fairly common; *Throscus carinifrons*, several; *Drilus flavescens*, *Malthinus frontalis*, *Dasytes oculatus*, *Ernobius mollis* (no fir trees anywhere near), *Phlæophilus Edwardsii*, *Lamprosoma concolor*, *Psylliodes dulcamaræ*, *Mantura Matthewsii*, *Anisoxya fuscula*, *Mordellistena brevicauda* (abundant in flowers in early summer); *Bruchus seminarius*, *Apion Waltoni* and *atomarium*, *Orchestes pratensis*; *Platytarsus setulosus*, two examples of this apparently very rare weevil swept up on a very hot damp evening in July, along with *P. echinatus*; *Orobitis cyaneus* (frequent), *Ceuthorhynchideus versicolor*, *Amalus scortillum*; *Phytobius 4-tuberculatus* and *Litodactylus leucogaster*, far away from any water, with several other species already recorded.

The capture of *Aphodius Zenkeri* on two or three occasions by evening sweeping induced me to examine the droppings of the deer in the Park, wih the result that I found this somewhat rare beetle in considerable numbers. *A. obliteratus* accompanied it, as at Mickleham, also *A. rufescens* and other common species of this genus. Only one further example of *Heptaulacus villosus* was found after the grand haul on June 20th (vol. xxv, p. 359), this specimen occurred by evening sweeping on July 11th.

In dead birds and rabbits, besides swarms of *Aleocharæ*, *Saprini*, *Histers* and other carrion feeders, *Necrophorus ruspator* and *interruptus*, and *Nitidula rufipes* occurred, but all three were scarce.

A considerable number of the above species have been observed by me for the first time in the Chatham district; but, on the other hand, I have looked in vain for *Leptinus*, *Euplectus Duponti*, *Ptenidium turgidum*, *Sphindus dubius*, and several other rare beetles which were to be found, in former years, in Cobham Park.

23, Ranelagh Road, Sheerness:
October 21st, 1889.

DESCRIPTIONS OF TWO NEW GENERA, AND OF SOME UNCHARACTERIZED SPECIES OF *GALERUCINÆ*.

BY JOSEPH S. BALY, F.L.S.

EMATHEA VIOLACEIPENNIS.

Sub-rotundata, postice paullo ampliata, convexa, fulva, nitida, antennarum articulis intermediis, oculis scutelloque nigris; elytris sat crebre punctatis, metallico-violaceis. *Long.*, 3 *lin.*

Hab.: Burmah; a single specimen (my collection).

Head short, scarcely broader than long; antennæ half the length of the body, the 4th to the 8th joints black, the rest fulvous. Thorax three times as broad as long; sides nearly straight, converging from base to apex; disc shining, transversely convex. Elytra much broader than the thorax, convex, faintly excavated below the basilar space, strongly and rather closely punctured.

DORYIDA.

In my original definition of the above genus, the four posterior tibiæ were described as being each armed with a short spine or tooth; Dr. Chapuis, to whom I lent one of my type specimens, followed me in this; but in a recent examination of both of the specimen in my own collection, and also of that sent to Dr. Chapuis, I have failed to detect any trace of teeth; it must, therefore, be concluded that the original diagnosis was erroneous, and that the four hinder tibiæ are unarmed. In the two species described below, all the tibiæ are equally devoid of spines.

DORYIDA NIGRIPENNIS.

Oblongo-ovata, convexa, fulvo-rufa, nitida, antennis, basi exceptis, femorum apice, tibiis, tarsis elytrisque nigris, his distincte subcrebre punctatis; thorace transversim convexo, utrinque ad latus transversim sulcato, tenuiter punctato, punctis hic illic irregulariter congregatis; disco utrinque piceo-maculato. *Long.*, 4 *lin.*

Hab.: Siam, Mountains of Laos (*Mouhot*).

Head not longer than broad; antennæ two-thirds the length of the body, slightly attenuated at base and apex, the 2nd and 3rd joints very short, equal. Thorax nearly three times as broad as long at the base; sides rounded and converging from the base towards the apex, the apical angle thickened and produced into a broad transverse tubercle; disc transversely sulcate on either side near the lateral margin, finely but distinctly punctured, the punctures irregularly crowded over the surface. Elytra broadly oblong, convex, irregularly punctured, the punctures stronger than those on the thorax.

DORYIDA TARSALIS.

Oblonga, convexa, piceo-fulva, nitida, antennis flavis; pectore, abdomine pedibus, femoribus anticis subtus tarsisque exceptis, scutelloque nigris; thorace utrinque transversim sulcato; elytris minute punctatis, apice extremo nigro. *Long.*, 3 *lin.*

Hab.: Siam?

Head scarcely as long as broad, eyes black; antennæ filiform, pale flavous. Thorax more than twice as broad as long; sides nearly straight, obliquely converging from base to apex, all the angles acute, the anterior ones slightly produced laterally; disc shining, impressed on either side with a transverse groove. Elytra broadly oblong, less convex than in the last species.

STETHIDEA, *n. g.*

Corpus *oblongo-ovatum, convexum.* Caput *exsertum;* antennis *ad corporis dimidiam vix æquilongis, articulis secundo et tertio brevibus.* Thorax *transversus.* Elytra *confuse punctata.* Pedes *modice robusti;* tibiis *posticis quatuor singulis spinâ brevi armatis;* unguiculis *appendiculatis.* Prosternum *ad coxas æquialtum, basi lobatum;* acetabulis *anticis integris;* mesosternum *elevatum, ad metasternum æquialtum, apice integrum.* Metasternum *inter coxas intermedias protrusum, et cum mesosterno processum obtusum formanti.*

Type, *Stethidea (Doryida) Balyi (Duvivier).*

The peculiar formation of the meso- and meta-sterna, together with the armed posterior tibiæ, separate the present genus from *Doryida*; from *Callima* it is separated by the armed tibiæ.

TRICHIDEA, *n. g.*

Corpus *elongatum.* Caput *exsertum;* oculis *rotundatis;* antennis *filiformibus.* Thorax *transversus, dorso transversim bifoveolato.* Elytra *anguste oblonga, pube suberecta vestita, elevato-costata, interspatiis seriato-punctatis.* Pedes *simplices;* tibiis *posticis quatuor apice spinosis; anticis inermibus.* Prosternum *coxis anticis occultum, basi lobatum;* acetabulis *anticis nigris.*

Type, *Trichidea Bowringii.*

Nearly allied to *Strobiderus* and *Syoplia*, Jacoby; separated from both by the excavated disc of the thorax, and also from the latter by the unarmed anterior pair of tibiæ.

TRICHIDEA BOWRINGII.

Elongata, modice convexa, rufa, nitida, pectore, abdomine pedibusque flavis, tibiis apice tarsisque piceo-nigris; thorace sat profunde bifoveolato; elytris nigris pube suberectâ vestitis; elevato-vittatis, interspatiis bifariam punctatis. *Long.*, 3 *lin.*

Hab.: Hong Kong (*Bowring*).

Head triangular; eyes and jaws black; antennæ slender, filiform, the 2nd joint short, moniliform, the 3rd and three following joints each three times the length of the 2nd (the remaining ones broken off). Thorax transverse; sides slightly produced and rounded anteriorly, sinuate posteriorly; disc deeply bifoveolate. Elytra narrowly oblong, moderately convex, clothed with sub-erect griseous hairs; each elytron with ten raised vittæ, the first, next the suture, short; interspaces each with a double row of punctures.

Trichidea Mouhoti.

Elongata, flava nitida, pectore abdomineque rufo-fulvis; capite, antennis piceo-flavis exceptis, elytrisque nigris; thorace sat profunde bifoveolato; elytris pube suberectâ vestitis, elevato-vittatis, interspatiis bifariam punctatis, interstitiis irregulariter elevato reticulati. Long:, 2½ lin.

Hab.: Siam, Laos (*Mouhot*).

Head black; antennæ piceo-flavous, equal to the body in length. Thorax similar in form to the preceding species, disc impressed with two large deep foveæ. Elytra clothed and punctured as in *T. Bowringii*, but the punctures on the interspaces are stronger, and their interstices are irregularly elevate-reticulate.

NOTES.

Pseudocophora flava, Allard, = *P. flavescens*, Baly.
Cueorane violaceipeennis, Allard, = *C. elegans*, Baly, *var.*
„ *crassicornis*, Fairmaire, = *C. fulvicollis*, ♂, Baly.
Chthoneis suturalis, Allard, = *C. suturalis*, Duvivier.
„ *univittata*, Allard, = *C. bivittata*, Baly.
Æthonea variabilis, Jacoby, Trans. Ent. Soc., 1888, p. 199, = *Æ. Murrayi*, Baly.

The Butts, Warwick:
October, 1889.

NOTES ON THE *LEPIDOPTERA* OF MOOLTAN.

BY N. MANDERS, F.E.S, SURGEON, MEDICAL STAFF.

Mooltan is noted above all other Indian stations for its "heat, dust, beggars and tombs;" it might also be added, for the poorness of its insect fauna. Neither is this to be wondered at, when its position and climate are taken into consideration. It is situated in the north-west corner of the Bicamer or Great Rajputana Desert, and, except in the immediate vicinity of the Cantonment, where trees and shrubs have been artificially planted, and here and there where cultivation of tobacco, &c., is carried on by means of canals from the Chenab some four miles distant, the whole surrounding country is a flat treeless desert, covered sparingly with camel-thorn and other desert shrubs, and along the banks of the canals by long coarse grass.

The climate is noted for its extreme heat and dryness. The rainfall averages 6·5 inches in the year; I believe there is no record above 12 inches. The soil is a tenacious alluvium, and it is curious how after a moderate shower of rain the water lies in extensive pools for hours. There is nothing, therefore, to mitigate the terrible heat of the Indian hot weather, except the dust storms, which are occasionally frequent in the latter summer months. During these storms, which advance and retire with extraordinary rapidity, the air becomes darkened with immense volumes of dust and sand; so much so, that objects less than fifty yards distant become quite invisible, and trees are not unfrequently uprooted by the violence of the wind. The one relief the storms bring is the diminution of the temperature, the thermometer frequently falling fifteen or twenty degrees in as many minutes; but this is merely temporary, the thermometer soon rising again to 98, 100, or frequently to 106 degrees in the shade, where it persistently remains for weeks. Such is Mooltan for eight months in the year—very hot, very dry, and most objectionable.

The remaining four months are, as far as the climate is concerned, simply perfect—bright sunny days with cold frosty nights, but entomologically there is little more to be done than in the hot weather.

I soon found that it was perfectly useless to attempt to collect in the surrounding country, and so confined my attention to the two large public gardens, one near the city and the other close to the Cantonment.

These gardens were, I believe, made by the East India Company for the benefit of their servants, but since the mutiny they have been kept up by a grant from Government. Here, with great care and constant attention, a certain amount of grass struggles for existence, and is laid out in lawns and terraces; while a few rose trees and other plants do their best to contend against adverse circumstances, which frequently prove too much for them.

In such a spot, then, did I, in May, 1886, first start collecting Indian butterflies, and shortly afterwards became possessed of De Nicéville's "Butterflies of India," and when I read the first line of the preface, "India, the land of sunshine, is the land of butterflies," I quite agreed as to the sunshine, but where were the butterflies?

It will be seen that my list only includes some thirty species, and even of these some are represented by single specimens only. I really do not think that a longer residence in that delectable spot would have produced any more. I have added a few notes to each species.

Danais Limniace—occurred sparingly in June, August, and November; more commonly after rain. *D. Chrysippus*—this hot weather loving creature was everywhere abundant except in August, when the heat proved too much even for it. *D. Genutia*—only less common than the last.

Melanitis Leda—common under the shade of large trees; it is quite crepuscular in its habits, and is difficult to obtain in good condition, owing to the looseness of the scales.

Atella Phalanta—fairly common, but not abundant.

Junonia Asterie and *Almana*—I take these to be one and the same species, possibly a case of seasonal dimorphism; but if so, it is curious that both forms should occur at Mooltan where the climate is very similar for eight months in the year, and both forms occurring in the hot weather. *J. Orithyia*—this beautiful butterfly is very common, and rejoices in the hottest sunshine and barest desert; it is most abundant in the hot weather.

Pyrameis cardui—I took a few specimens in January on the banks of the Chenab.

Zizera Karsandra, Catochrysops contracta, Tarucus callinara—are all common amongst low bushes and grass, particularly in April and May.

Lycæna bœtica—a very common insect, occurring in a succession of broods throughout the summer. My specimens from the Panjab are all decidedly larger than those from Upper Burmah and the Shan States, where it is also very common.

Spindasis hypargyros—this is not an uncommon species, but difficult to see, as its colour matches admirably with the sandy soil. My specimens differ considerably in the presence of the oblique band passing from the middle of the costa to the anal angle of the fore-wing; but they all agree in being much paler than specimens from Karachi and Aden.

Teracolus protractus—an abundant species; crowds of them may be seen on nearly every flowering shrub. It is a lovely insect when fresh, but the delicate pink is very evanescent; May and June are the months of its flight. *T. Arne*—I have only one specimen of this; I have probably overlooked the species, mistaking it when on the wing for *T. intermissus* or *puellaris*, both of which are common at the same times and seasons. *T. Dynamene*—this is an abundant species, but somewhat difficult to capture on account of its colour; nearly all species of *Teracolus* are either white or some shade of yellow, and either colour is difficult to detect, owing to the glare of the sun and desert sand. A case of protective mimicry occurring in a whole genus. *T. Etrida*—a very common species; its larvæ and pupæ are also very abundant in May and early June. *T. subroseus*—I have one specimen only, which I captured after a heavy dust storm in July; it is considerably battered, and was probably blown in from some outlying district.

Delias epicharis—the above remark applies to this species also.

Catopsilia Crocale—this is a common species in the later summer months; it is somewhat difficult to catch, as it is a high flyer; it is fond of settling on the leaves of the *Cassia fistula*. *C. florella*—one specimen only, taken August 13th. *C. pyranthe*—very common, not to say abundant.

Terias venata—my one specimen agrees exactly with specimens in the British Museum; it was probably introduced, and is not a Mooltan insect at all.

Colias Fieldi—I consider this the most surprising capture I made; I have always understood that it was an insect of the higher ranges of hills, 6000 to 9000 feet, but in January, in one field of lucerne on the banks of the Chenab it was common enough. *Pyrameis cardui* was also fairly common in the same field.

Belenois Lordaca—larvæ, pupæ and perfect insect all very abundant throughout the summer.

Papilio Pammon—one worn specimen only, taken after a heavy dust storm. How many hundred of miles it had unwillingly travelled would be difficult to say; *but, judging by its tatt*ered condition, the majority of the distance through thorny paths. *P. Erithonius*—one of the commonest Mooltan butterflies, more especially after rain in July and August; all my specimens are rather larger than those taken in Upper Burmah at an elevation of 3000—4000 feet.

Chapra Mathias (Moore)—a common species almost throughout the year.

Pamphila Karsana (Moore)—this is also a common species.

Norwood House, Weston-super-Mare:
October 20th, 1889.

ICERYA PURCHASI, AND ITS INSECT-ENEMIES IN NEW ZEALAND.

BY W. M. MASKELL, F.R.M.S.

At Vol. xxv, p. 232, Mr. Douglas has a note on *Icerya Purchasi* and *Ortonia natalensis*, in which, after remarking on the difference between the larvæ of the two species, he has some observations on the predaceous enemies of *Icerya*. This matter is one more interesting to us in the South Seas, to fruit-growers in California, or at the Cape of Good Hope, than it is to English horticulturists, who will not ever have an opportunity, I hope, of knowing practically what *Icerya* is capable of in the way of destruction. It might be a new experience to some of them to see, as I did a couple of months ago, a grove of wattle trees (*Acacia* sp.), none of which was under thirty feet high, and many of them fifty, standing up, nothing but bare trunks and branches, killed stone-dead by *Iceryæ*, not one of which had been known in the locality eight years ago. And yet (and this is the object of my penning this note) at the time of my visit only a few *Iceryæ* were to be found in the neighbourhood; one had to look about and hunt for specimens where, say in 1886 or 1887, there were millions. The meaning of this statement is simply this, that *Icerya Purchasi*, which first appeared in New Zealand about 1877, and which had not reached the locality of which I speak until about 1881, had increased in five years so much as to cover profusely the vegetation, had killed, amongst others, this grove of wattles, and had then, in two or three years more, suddenly decreased in numbers until it is now no longer plentiful. The reason of this decrease is certainly not want of food, for the pest is practically omnivorous, and there is any quantity of vegetable nutriment available for it; what has brought about the improvement (only too late to save my friend's trees) has been the native enemy, a species of *Coccinella*.

Mr. Douglas, in referring to a correspondence between Miss Ormerod and Mr. F. S. Crawford, of Adelaide, observes that of the two parasites therein referred to, a Coccinellid and a Dipteron, neither has been determined. I believe that at least the Dipteron is now well-known under the name of *Lestophonus iceryæ*, Riley and Howard. So well is this fly thought of in America, that the United States Government, at the instigation of Professor Riley, despatched a special envoy, Mr. A. Koebele, to South Australia to procure as many specimens possible of *Lestophonus*, for acclimatisation in California. Mr. Koebele obtained, I believe, many thousand flies, and despatched them to America; unfortunately, two obstacles seemed to have come in the way of success so far: one was the action of the Californian custom house officers, who were foolish enough to insist on opening the cases; the other is the discovery of a Hymenopterous parasite on *Lestophonus* itself. I understand that Professor Riley is now making very careful efforts to keep his *Lestophonus* alive in captivity, and not to turn them out until the Hymenopters have been destroyed. But it is not for me to detail the American experience; are not these things written in Professor Riley's excellent monthly periodical, "Insect Life?"

Mr. Koebele, on his way back from Australia, stayed a few weeks in New Zealand; and this brings me to my particular point. Writing in 1887 (Scale Insects of New Zealand, p. 36), I referred to the idea of introducing and acclimatising parasitic insects from other countries; and I remarked that it seemed to me better to look forward to the time when our own native species would begin to act usefully. That time was actually nearer than I thought. At the moment when my words were being printed, *Icerya Purchasi*, which had up to that date increased so wonderfully about Auckland that the trees and shrubs were white with it, like snow, was beginning to rapidly disappear under Coccinellid attacks. And when, in January, 1889, Mr. Koebele came to Auckland, he was scarcely able to find specimens of the pest without considerable trouble. I have already said that in another locality (Napier, Hawke's Bay) a similar thing was happening; and Mr. Koebele was so pleased at the fact that he devoted himself to collecting our N. Z. *Coccinellæ*, and, I believe, took back with him to San Francisco more than two thousand live specimens.

Two or three years ago a friend of mine, on his way out from England, stopped for a month or so at the Cape of Good Hope, and went up to Natal. There he fell in, I believe, with Mr. Bairstow, and on his representations as to the value of *Coccinella* against *Icerya*, procured a large jar-full of both insects and brought them on with him to New Zealand. They stood the passage remarkably well, and on his arrival here my friend brought me the jar and asked me what he ought to do with them. I found at least eighty Coccinellids alive and thriving, and I advised that they should be taken across to Nelson (in the other island), where *Icerya* was literally swarming, and carefully looked after there. Here, in Wellington, and in an area of more than 100 miles radius, *Icerya* has never yet appeared, for some reason unknown to me; so that I could not do anything myself to help in the work, but I advised my friend to select some handy-sized shrub at Nelson, cover it with a gauze tent, securely pegged down, and put his Coccinellids on it, so that they might get acclimatised under inspection. He choose a lemon tree covered with *Icerya*; but, like a good many other things in this country, the experiment was spoilt: my friend left Nelson, the people neglected the gauze covering, and all the Coccinellids escaped. Still, for aught I know, they may be thriving well enough, although none have been seen since. These were Mr. Bairstow's Natal *Coccinellæ*; probably, I suppose, Miss Ormerod's *Rodolia iceryæ*: a very large species, and, in my specimens, not spotted.

But whether these particular insects are at work or not in Nelson, it appears to be a certain and gratifying fact that our New Zealand species are destroying *Icerya* rapidly at Auckland and Napier. And it is for this reason that I do not urge in this country the importation of exotic parasites. Time will show whether the good results of the past two years are going to be permanent; at present, I feel by no means dissatisfied with our native *Coccinellæ*.

I venture to close this note with a remark on the name *Icerya*, about which I believe there has been some controversy in America. The name was given by Dr. Signoret, in compliment to his friend Dr. Icéry, who, as I understand, sent the first specimens of *I. sacchari*, the "pou à poche blanche," from Mauritius.

Wellington, N. Z.:
May 29th, 1889.

Habits of the honey-moth.—Early this summer, my old friend, the Rev. Henry Williams, of Croxton, Thetford, sent me a large piece of old discoloured honey-comb containing larvæ of *Galleria cereana (mellonella)*. These larvæ were by no means beautiful, being very much more like those of *Tipula oleracea* (Daddy Longlegs) than any other Lepidopterous larva that I have seen, and they had something of a similar loose rolling movement when at comparative rest. They were plump, soft, and smooth, with well divided segments and tapered at each extremity, dull pale grey above, pale yellowish beneath, the spots invisible, and hairs extremely short and delicate; head dark chestnut, with dark brown mouth; dorsal plate dark chestnut, small, with a broad division, anal plate small, yellow-brown. Burrowing in the old honeycomb, and making passages through it, but not lining them with any silk. When out of the comb, most remarkably active, either in search of food or of a proper place for pupation. This, however, commonly took place in the comb, a tough, spindle-shaped, yellow cocoon being formed—or, indeed, many in a bunch. Those larvæ which left the comb spun tough strong cocoons between cardboard or paper, or in some corner. The moth, on emergence, displayed even greater activity in running than the larva, and the speed with which they would run over, under, and about the comb, rendered it no easy matter to box them. At dusk, however, they usually left the comb and flew about the room, settling down after a time at the sides of the window. But some showed a far more enquiring disposition, and came downstairs into other rooms, where they found the lights irresistible. One or two females paired, and laid eggs on the comb, and in a few days the young larvæ were at work. They grew rapidly, and, before I was aware, they had devoured the whole remainder of the comb, leaving a bare bunch of cocoons, and a mass of *débris*, and then galloped off full speed to search for more provender. But I could get no more at the moment, and the impatient creatures ran all over the place until they were tired, and then *spun up*. Very few were more than half-grown, some not a quarter, and I concluded that they would die, but this was by no means their intention. In a few weeks they began to emerge, and in the fine weather of October they were flying in almost all parts of the house, some being nearly or quite as small as the allied *Meliphora alveariella*. About this time, I went over to Wisbech, and found that the Messrs. Balding had received a large mass of infested comb, and had actually reared (doubtless, in two broods) specimens continuously from July to October, to the number of *more than a thousand*. With such tenacity of life, and such extraordinary activity as this species possesses, it would become a most formidable pest if it were to feed as freely upon *new* comb as it does upon old.—C. G. Barrett, King's Lynn, Norfolk: *November 11th*, 1889.

Anarta myrtilli at flowers.—On the very day of leaving Haslemere, I walked up to a strip of woodland on one of the slopes of Blackdown, in the hope of a few more *Hypena crassalis*, to make me a *good* fresh series—with the result, of course, of catching only one specimen. Rain had fallen, but the morning was bright and warm, and moths common—in both senses of the term; *Eupithecia lariciata* in plenty among larch, and *Cidaria corylata* scurrying hastily off every oak trunk, with other still more abundant species; but I was witness of a performance so new to me, as fully to reward me for the walk. Rhododendrons, though getting over, still had many bunches of blossoms, and at one of these, hovering like a *Sphinx* or a *Plusia*, was a little moth very evidently sucking the honey. Much astonished was I, in netting him, to find a worn but unmistakeable *Anarta myrtilli*, which had left his usual headlong exercise over the heather to visit the Rhododendron flowers.—Id.: *December 9th*, 1889.

Identity of Phycis adornatella and P. subornatella.—In the Entomologists' Annual for 1867, p. 140, *et seq.*, is a translation, from the "Isis, 1846," of Professor Zeller's descriptions of *adornatella*, Tr., and *subornatella*, Dup., which he regarded as distinct species. He distinguished *subornatella* "by the paler white of the anterior-wings, the presence of the whitish fascia before the first transverse line, and the less distinct angles of the second." *Adornatella* is distinguished "by the want of the fascia between the base of the wing and the first transverse line."

Some years later, Professor Zeller sent me types of both forms, and certainly these appeared sufficiently different. His *adornatella* is of a dark red-grey, much like the colour of *obductella*, and its markings are suffused and indistinct, but the second line has a deep indentation above the middle, and it has no pale fascia before the first line. His *subornatella* is paler in colour, the red-grey being varied with ashy-white. This ashy-white forms an indistinct, irregular fascia before the first line, an extensive patch towards the costa in the central area of the wing, and another patch towards the hind margin. In the second line occurs a similar indentation. The two forms, therefore, look very different from the irregular whitish markings in *subornatella*, but the shapes of the wings, the positions and forms of the two transverse lines, and pair of spots between them, are very similar.

The object of the translation of Zeller's descriptions in the Ent. Ann., 1867, was to show that the species which had stood in British collections up to that time under the name of *dilutella*, was really *adornatella*, Tr., and to introduce to the British fauna an insect then recently taken by Mr. Greening, in the Isle of Man, which agreed accurately with *subornatella*, Dup., and from that time both names have figured in our collections and lists. I had then been collecting in Ireland, and very soon found that my specimens from the Dublin coast agreed with those from the Isle of Man. An opportunity afterwards occurred of collecting at Box Hill, and there I found, commonly, the other form agreeing closely with *adornatella*, and for many years I believed them distinct. Subsequently, I captured and reared specimens in Pembrokeshire, which agreed in most cases with the Irish and Isle of Man insects; and specimens came to hand from Perthshire, which seemed to constitute a red variety of the same—*subornatella*.

At Durdham Downs, near Bristol, a form is common which on the whole is lighter and brighter looking than any of the foregoing, the red-grey being almost limited to the edges of the transverse lines, and the intermediate spaces much suffused with *ochreous* and ashy-white, but as no whitish fascia appears near the base, these have been considered to be *adornatella*. The female of this local form is more suffused with red-grey. At Folkestone a pale form is also found, but with little of the ochreous colouring, it, indeed, resembles ordinary *subornatella*, except from the absence of the basal fascia.

Those from Box Hill are darker, especially in the female, and, as I said before, agree closely with Zeller's types of *adornatella*; and a few specimens taken in Norfolk present similar characteristics. It would, therefore, seem that *adornatella* inhabits the south and east, *subornatella* the north and west.

But, for some years, my friend Mr. N. M. Richardson, has been studying what we have called *adornatella* in the Isle of Portland, where, from the nature of the ground, the capture of specimens is not very easy. He has, however, this year secured a considerable series, which he sent me for examination. Some of these are red-brown, or red-grey, more or less dark, with indistinct markings, and hardly any trace of whitish clouding—resembling Box Hill specimens,—others are in varying degrees brighter in colour, with the red most distinct in the neighbourhood of the two transverse lines, in some cases having ochreous shading towards the dorsal margin in the intermediate spaces, and all with ashy-white clouding towards the costa. In the darkest specimens no trace of the white shading appears in the basal space—that before the first line, but in others it shows itself in varying degrees towards the costa, then others show a faint extension of it across the wing, until, in a few, it actually produces the irregular, indistinct basal fascia, which has hitherto been held to be the one reliable character of *subornatella.* These specimens from the Isle of Portland, therefore, bridge over the whole interval, and prove clearly that *adornatella* and *subornatella* form one variable species, in which the subject of geographical or climatal permanent variation is well illustrated. The forms which show the most considerable development of white clouding seem to come from the coast—at Folkestone, on sand, Pembroke, on mountain limestone, Ireland and the Isle of Man, on (I believe) trap-rock; those with ochreous colouring more inland, from the softer limestone or chalk of Durdham Downs, and the dull red-grey forms from the chalk, still further inland, at Box Hill; while Portland seems to unite all forms.

Reluctant to give up my old belief, which also was that of my friends Prof. Zeller and Dr. Knaggs, I have studied all these forms carefully side by side, and with magnifiers, but cannot find a single reliable point of distinction between them, all the apparent characters being mixed together and assumed on each side. I have thought that the fore-wings of *subornatella* were longer and narrower than those of *adornatella,* and to some slight extent this seems to be the case; but among unquestionable *adornatella* specimens occur in which the fore-wings are even narrower than in the other form. The species is, in fact, variable in this respect, and there is also a difference between the sexes.

With the union of these two forms as one species, the need for both names seems to disappear. There can be no doubt, I think, that Stephens's description of *Phycita dilutella,* Hb. (vol. iv, p. 303), refers to this species, and Hübner's figure 69 in his fifth volume seems to me conclusive. We may, therefore, safely go back to the old name—*dilutella,* Hüb.—ID.: *December 5th,* 1889.

Habits of the larva of Eudorea dubitalis.—I bred one or two specimens of *Eudorea dubitalis,* eight or nine years ago, from roots of sorrel collected at Folkestone, on Good Friday, when searching for larvæ of *Sesia chrysidiformis.* The larvæ must have been among the roots but I did not notice them. There was little or no moss among them.—W. MACHIN, 29, Carlton Road, E.: *December,* 1889.

The life-history of Simaethis combinatana, Walk.—On August 21st, in a secluded gully above the Wellington Reservoir, I discovered a number of small larvæ feeding on the native groundsel (*Senecio bellidioides*). They were living in silken galleries, which were formed amongst the young shoots of the plant, and were rather abundant. In shape, the larva was somewhat stout, slightly tapering at each end. The head and dorsal surface of the prothorax were corneous and pale brown in colour, the rest of the body being ochreous. Each segment was provided with eight black tubercles, arranged in two parallel rows, consisting of two and six warts respectively. From each of these a small black bristle arose. Length of the larva, 3 to 4 lines. During September these larvæ spun a number of extremely dense white cocoons amongst the dead shoots of their food-plant, and were transformed into somewhat elongate pale brownish pupæ, from which the first specimens of *Simaethis combinatana* emerged on September 26th, and the others have been steadily appearing until to-day. The moth is tolerably common during the summer months, and delights to bask in the hottest sunshine, frequently flying about in a very fussy manner amongst the herbage. It seems likely that there are a succession of broods during the year, as I have taken the insect from October till April, but have not reared it before this spring. The resemblance of this species, in the matter of habits, &c., to the British species is very evident.—G. V. Hudson, Wellington, New Zealand : *Oct. 2nd*, 1889.

On the flight of Atta antarctica.—This ant, which is very abundant on the hills round Wellington, appears to perform its annual flight with great regularity. On April 1st, 1888; I observed enormous numbers of the ♂ flying about, over a very large extent of country, the numerous webs, constructed by the autumnal spiders, being filled with them, while the logs, fences, and ground were covered with the ♂ and ♀ ants, in proportion of about 10 ♂ to 1 ♀. The same phenomenon was exactly repeated on March 31st, 1889, when the ants were, if anything, even more abundant. Both days were calm and sunny, and no doubt this species takes advantage of the fine weather which usually prevails about that time to perform its annual migrations, still, the close approximation of the two dates is certainly remarkable. I should imagine that the " stocks " of the several nests must be most completely mixed up by the process, which probably is the object aimed at, although it is rather hard to understand how the workers in different nests, over an area of eight or ten miles, know exactly when to liberate their ♂ and ♀ ; nevertheless, I feel nearly sure that this is done almost simultaneously in every nest. I should also mention that during both of these flights I heard that peculiar " humming in the air " described by White, of Selbourne, very distinctly, and have little doubt that the sound, which so puzzled that renowned naturalist, was caused by a migration of ants in the higher regions of the atmosphere.—Id.

Psocidæ and Mistletoe.—In a note on the insects of the mistletoe, published in the " Revue d'Entomologie," 1889, p. 232, my friend Dr. Puton, alludes to a species of *Psocus*, found near Remiremont, and adds concerning it, " que j'ai eu le tort de ne pas récolter pour en faire part à un spécialiste." Amongst the insects recently found in mistletoe near Hereford by Dr. T. A. Chapman, I have seen two species of *Psocidæ*, viz. : *Cæcilius flavidus*, Steph., and *Stenopsocus cruciatus*, L. These are of general distribution, and the latter is often found in mid-winter, even on snow. *Psocidæ*, as a rule, do not affect any particular plant, excepting in so far that certain plants afford an abundance of the *débris* and cryptogamic growths upon which they feed. Undoubtedly, conifers are much frequented by some species, almost to the exclusion of other trees. They afford much *débris* and also great *shelter* (an essential point). The dense tufts of mistletoe do the same. Therefore the *Psocidæ* found therein should not be neglected ; they very probably would have only the slightest special connection with the plant, but the favourable conditions might attract rare species. *Psocidæ* are usually gregarious, but not always so. *Ps. morio*, Latr., is universally rare, and has mostly been found only singly ; in this country the number of recorded examples is exceedingly small, and I know of no capture for many years. *Ps. quadrimaculatus*, Latr., is almost in the same case, although it is most certainly gregarious when and where it does occur. Much and interesting was once written upon the "population of an old pear tree." Much and interesting could be written on the denizens of an old tuft of mistletoe.—R. McLachlan, Lewisham, London: *December*, 1889.

Limnophilus hirsutus in abundance at sugar in Norfolk.—During a visit to the Norfolk coast in August last, I found *Limnophilus hirsutus* in great abundance in one spot close to Old Hunstanton. It occurred about a pond of beautifully clear water, but thickly overgrown with aquatic plants, and into which slowly ran an equally clear stream. A row of posts along the side of this pond came in the range of my sugaring operations, and the sugar here proved infinitely more attractive to the *Limnophilus* than to the *Lepidoptera* for whose benefit it had been applied. Hundreds of *Limnophilus hirsutus* might easily have been boxed off the sugared posts and the rushes growing near, had they been wanted. The only other *Trichoptera* noticed about this pond were *Colpotaulius incisus* and *Triænodes bicolor*, both of which were rare. *Limnophilus affinis* occurred in abundance about a pond between Hunstanton and Heacham, and sparingly on rushes, &c., in the Holme Saltmarshes; in the last mentioned locality *L. marmoratus* also occurred.—Geo. T. Porritt, Huddersfield: *November 4th*, 1889.

Localities of some rare British insects.—*Perilissus erythrocephalus*, Grav. (*cf.* J. B. Bridgman, Further Additions to Rev. T. A. Marshall's Catalogue of British *Ichneumonidæ*), Trans. Ent. Soc. Lond., 1889, pt. iii, p. 483.—I took two specimens of the above at Glanvilles Wootton on July 30th, 1888.

Hemiteles longicauda, Thoms. (*lib. cit.*, p. 417).—Two specimens of this species were taken by me at Bournemouth in April, 1867.

Proterops nigripennis, Westw.—My specimens of this great rarity were taken in Parley Copse, Dorset, on August 20th, 1834.

Amphipectus Dahlbomii.—Also taken by my father at Knighton Heath, Dorset, July 28th, 1841.

Gomphocerus rufus, Linn.—In addition to the localities mentioned by Mr. Eland Shaw, I may name Battersea Fields, where it was taken by Samouelle, and Lyndhurst, New Forest, where my father met with it on August 12th, 1827, and October 1st, 1830.

Mecostethus grossus, Linn.—This fine grasshopper is by no means rare, although local, frequenting boggy heaths in Hampshire and Dorsetshire, and also Whittlesea Mere and Bardulph Fen.

Œdipoda cœrulescens, Linn.—I have specimens of this from Guernsey. It has been recorded by old authors as occurring in Britain.—C. W. Dale, Manor House, Glanvilles Wootton, Dorset: *November 1st*, 1889.

Captures in Jersey.—I have just returned from a trip to Jersey, where I have taken three rare British species, *Prostemma guttula*, *Pionosomus varius*, and *Pyrrhocoris apterus.*—*Id.*

Review.

Indian Museum Notes: Vol. i, No. 1. Notes on Indian Insect Pests. Issued by the Trustees. Calcutta: 1889. 8vo, pp. 1—76, pl. i—iv.

This is a serial publication, to be continued from time to time as materials accumulate, issued by the Trustees of the Indian Museum, Calcutta, under the authority of the Government of India, Revenue and Agricultural Department, and to which communications are invited. The purpose of the publication is to aid cultivators of trees, plants, and agriculturists generally, in subduing the insects that, to an immense extent, are detrimental to all vegetable produce in India, by giving reliable information on the nature and habits of the foes, this being the only efficient means of combating their ravages. The work is planned much on the same lines as "Insect Life," published by the American Department of Agriculture, and like it cannot fail to have a beneficial effect. This No. contains 7 articles on *Rhynchota*, by E. T. Atkinson; 2 on *Lepidoptera*, by L. de Nicéville; and 15 on Insects generally, by E. C. Cotes. The figures on the plates are rendered with exquisite delicacy by photo-etching from original drawings.

Obituary.

Dr. Franz Löw died placidly at Vienna on 22nd November last, after a long and painful illness, in the 61st year of his age, as we learn from his brother Herr Paul Löw.

Hagen's "Bibliotheca Entomologica" enumerates six papers by Dr. Löw on diverse entomological subjects, published prior to 1862. After this date he appears to have given his attention for many years chiefly to the Homopterous Family *Psyllidæ*, and he acquired such a complete knowledge of all the palæarctic forms that he was enabled not only to rectify the synonymy of the described species and to add many new ones but also to group the whole in accordance with their minute anatomical characters, especially with reference to the genitalia. The results of his studies have been published from time to time, mostly in the "Verhandlungen der k. k. Zool.-botan., Gesellschaft in Wien," and in the "Entomologische Zeitung," vols. i and ii, during 1882 and 1883, when he was one of the editors of that journal. These were illustrated with plates containing excellent figures of the new species by his brother Herr Paul Löw. Single papers by him on *Psyllidæ* have also appeared elsewhere; there is one entitled "Diagnoses of three new species of *Trioza*," in vol. xiv of this Magazine (1877). To the "Entomol. Zeitung" he also contributed some papers on *Coccidæ*, viz., in vol. i, On the Natural History of *Acanthococcus aceris*, Sign.; On two species living on conifers, *Aspidiotus abietis*, Schrank, and *Leucaspis pini*, Hartig. In vol. ii, On a new conifer-Coccid, *Leucaspis pusilla*, Löw, on the dimorphism of the males of *Chionaspis salicis*, Linn., Gossyparia ulmi, Fab., and *Acanthococcus aceris*, Sign.; Description of two new species, *Pulvinaria ericæ*, Löw, and *Boisduvalia piceæ*, Löw. There are also papers on *Coccidæ* in the "Verhandlungen:"—On *Diaspis visci*, Schrank (with a plate); On a new genus and species, *Xylococcus filiferus*, Löw (with a plate), a wonderful creature that lives *in* the small branches of *Tilia grandifolia*; and On the scale of the *Diaspidæ*. *Aphides* had some attention from him, for in the "Verhandlungen," 1877, he had an article on *Pemphigus zeæ maidis*, Linn., and in the "Ent. Zeit.," vol. i, is a description of *Pemphigus nidificus*, Löw, n. sp. He also studied *Cecidomyiidæ*, &c. (*Diptera*), and contributed articles thereon to the "Verhandlungen." And in some of the volumes of the "Zoologischer Jahresbericht" of the Zoological Station at Naples, are Reports on *Hemiptera* made by Dr. Löw and his brother Paul, as referees. Probably some of his work is here casually overlooked.

The loss of such a man in the prime of life and in the plentitude of his labours is very sad. We lament for him not only as an effective scientific worker in a field in which he held the foremost place, but also as a friend ever eagerly willing to place his accumulated knowledge at our service, and now prematurely departed.—J. W. D.

J. B. Géhin, a French entomologist, died at Remiremont on the 2nd December, 1889, aged 73. He published much on the genus *Carabus* and its allies. Some of his work did not escape severe criticism. He formed a wonderfully rich collection of the groups he specially attended to, which we understand was purchased, a few months before his decease, by M. René Oberthür, and will augment his collection at Rennes.

Prof. William Ramsay McNab, M.D., F.L.S., died very suddenly at Dublin, from heart disease, on December 3rd, at the early age of 45. His grandfather and father were successively curators of the Botanic Gardens at Edinburgh. Educated for the medical profession he took his degree at Edinburgh in 1866, and for a time held an official medical appointment. But the hereditary instinct for Botany seemed to have prevailed. He became Professor of Natural History at the Royal Agricultural College at Cirencester, and subsequently of Botany at the College of Science at Dublin, and was also (at the time of his death) scientific director of the Royal Botanic Gardens at Glasnevin. He published several useful works on physiological and fossil botany, and was greatly esteemed in Dublin amongst the students, and his colleagues at the Royal College of Science. His name occurs frequently in the early volumes of this Magazine in connection with Scottish *Coleoptera*. His constant friend and fellow-student, Dr. Sharp, informs us that the entomological proclivity was probably derived from an uncle, Dr. Gilbert McNab, an Ayrshire man, who had a collection of insects, and who was the authority for several species recorded in the late Andrew Murray's Catalogue of Scottish *Coleoptera*, and this led to his making the acquaintance of Andrew Murray himself. Dr. Sharp adds that his first introduction to McNab was at a lecture on pathology at Edinburgh, when the perusal of an early No. of this Magazine acted as a stimulant and kept at least two of the audience awake. About 1870 he married a daughter of the Rev. Dr. Goold, of Dumfries, whose wife, *née* Crawford, was first cousin to one of our editors. The *widow* and five children deplore his loss.

Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: *Nov. 18th*, 1889.—Mr. H. TUNALEY, Vice-President, in the Chair.

Mr. E. C. Tye showed *Himera pennaria* and other insects taken at light near Yardley. Mr. H. M. Lee showed *Dasycampa rubiginea* from Sutton, Surrey. The evening was devoted to entering up records of captures of Butterflies by Members, in the Midlands, in a book provided for the purpose.

December 2nd, 1889.—Mr. W. G. BLATCH, President, in the Chair.

Mr. H. Tunaley showed *Cidaria truncata* and *C. immanata*, pointing out that a distinguishing mark lay in the shape of the bars on the underwings, which, in *immanata* formed an acute angle, and in *truncata* were rounded. He also showed *Agrotis agathina* from Sutton. Mr. C. J. Wainwright showed *Boarmia repandata* var. *conversaria* from Wyre Forest. Mr. W. G. Blatch read a paper on the *Coleoptera* taken on a small mossy bank near Knowle. He described all the natural features of the place, and gave the list of species, now numbering 412. Most of these species lived on the spot all the year round, and casual visitors had not been taken.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

ENTOMOLOGICAL SOCIETY OF LONDON: *December 4th*, 1889.—The Right Hon. Lord WALSINGHAM, M.A., F.R.S., President, in the Chair.

Prof. Franz Klapálek, of the Zoological Department, Royal Museum, Prague, was elected a Fellow of the Society.

Mr. W. L. Distant exhibited, on behalf of Mr. Lionel de Nicéville, a branch of a walnut tree, on which was a mass of eggs laid by a butterfly belonging to the *Lycænidæ*. He also exhibited two specimens of this butterfly which Mr. de Nicéville had referred to a new genus, and described as *Chætoprocta odata*. The species was said to occur only in the mountainous districts of North-West India, at elevations of 5000 to 10,000 feet above the sea level.

Dr. D. Sharp exhibited the eggs of *Piezosternum subulatum*, Thunb., a bug from South America. These eggs were taken from the interior of a specimen which had been allowed to putrify before being mounted. Although the body of the parent had completely rotted away, the eggs were in a perfect state of preservation, and the cellular condition of the yelk was very conspicuous. Dr. Sharp also exhibited a specimen of *Pœcilochroma Lewisii*, Dist., a Pentatomid bug from Japan of a dull green colour, which, when damped with water, became almost instantly of a metallic copper colour.

Mr. J. H. Leech exhibited a large number of *Lepidoptera* recently collected for him by Mr. Pratt in the neighbourhood of Ichang, Central China. The collection included about fifty-six new species of butterflies and forty new species of moths.

Mr. H. J. Elwes observed that he noticed only two genera in this collection which did not occur at Sikkim, and that the similarity of the insect fauna of the two regions was very remarkable. He added that about fifteen years ago, in a paper "On the Birds of Asia," he had called attention to the similarity of species inhabiting the mountain ranges of India, China, and Java. Mr. McLachlan remarked that he had lately received a dragonfly from Simla which had previously only been recorded from Pekin. Mr. Distant said he had lately had a species of *Cicada* from Hong Kong, which had hitherto been supposed to be confined to Java.

Mr. W. H. B. Fletcher exhibited a preserved specimen of a variety of the larva of *Sphinx ligustri*, taken in a wood near Arundel, Sussex. Mr. W. White asked if the larva was normal in its early stage; he also exhibited drawings of the larvæ of this species, and called especial attention to one of a variety that had been exhibited at a previous meeting by Lord Walsingham.

Mr. F. D. Godman read a long letter from Mr. Herbert Smith, containing an account of the *Hymenoptera*, *Diptera*, *Hemiptera*, and *Coleoptera* he had recently collected in St. Vincent, where he was employed under the direction of a Committee of the Royal Society, appointed to investigate the Natural History of the West Indies. A discussion followed, in which Dr. Sharp, Mr. Elwes, Lord Walsingham, and Mr. McLachlan took part.

Mr. Elwes read a letter from Mr. Doherty, in which the writer described his experiences in collecting insects in the Naga Hills by means of light and sugar. Mr. Doherty expressed an opinion that light, if used in very out-of-the-way places, rather repelled than attracted insects; in fact, that they required to be accustomed to it, and that the same remarks applied to "sugar." Colonel Swinhoe said that the attractive power of light depended very much on its intensity, and on the height of the light above the ground. By means of the electric light in Bombay he had collected more than 300 specimens of *Sphingidæ* in one night. Mr. J. J. Walker, R.N., stated that he had found the electric light very attractive to insects in Panama. Mr. McLachlan, Dr. Sharp, Mr. Leech, Mr. Elwes, the Rev. Canon Fowler, Mr. A. J. Rose and others continued the discussion.

Mr. Lionel de Nicéville communicated a paper entitled "Notes on a new genus of *Lycænidæ*."

Mr. F. Merrifield read a paper entitled "Systematic temperature experiments on some *Lepidoptera* in all their stages," and exhibited a number of specimens in illustration. The author stated that the darkness of colour and the markings in *Ennomos autumnaria* resulted from the pupæ being subjected to a very low temperature. In the case of *Selenia illustraria*, exposing the pupæ to a low temperature had not only affected the colour of the imagos, but had altered the markings in a striking manner. Lord Walsingham observed that it appeared that exposure to cold in the pupa state produced a darker colouring in the imago, and that forcing in that stage had an opposite effect; that insects subjected to glacial conditions probably derived some advantage from the development of dark or suffused colouring, and that this advantage was, in all probability, the more rapid absorption of heat. He said he believed that an hereditary tendency in favour of the darker forms was established under glacial conditions, and that this would account for the prevalence of melanic forms in northern latitudes and at high elevations.—H. Goss and *W. W. Fowler, Hon. Secs.*

DESCRIPTION OF A *GELECHIA* (*PORTLANDICELLA*) NEW TO SCIENCE FROM PORTLAND.

BY NELSON M. RICHARDSON, B.A.

In June, 1888, I took at Portland two specimens of a *Gelechia* which I could not satisfactorily refer to any British species, though it seemed to have affinities with both *umbrosella* and *mundella*. I have this summer taken a few more specimens, and as I was not satisfied to place them with either of the above two species, and could not refer them to anything else, I sent five of them to Mr. Stainton for his opinion upon them. He says, "I think the five certainly indicate a good species, nearer to *mundella* than to *umbrosella*. I am not aware that I ever saw it before."

This species seems to be decidedly rare at Portland, as though I worked for it in the only locality where it occurs, which is rather limited in area, I only succeeded in getting altogether eight specimens this year. It may be described as follows:—

Exp. al., 4¾—5¼ lines. Ground colour of fore-wing pale putty-colour, generally much sprinkled with dark grey scales, especially towards the inner and hind margins; a narrow blackish line crosses the wing close to the base, and is immediately followed by a blackish spot; the three usual spots are black, and there is sometimes a small blackish indistinct spot on the inner margin at the inner edge of the pale fascia; this fascia is of the ground colour, without any dark scales, very distinct, thinnest in the middle, and consists of two opposite spots, which are sometimes joined, but more often very slightly separated from each other by a few dark scales; it is placed three-fourths of the way from the base to the tip of the wing. Fringes like the rest of the wing. Hind-wing pale fuscous, a little darker at the apex. Face and palpi very pale ochreous, except the last joint of the palpi, which is marked with grey towards the tip. Eyes black. Antennæ black, with small indistinct pale rings. Head and thorax like the fore-wings, body like the hind-wings, except that the tip is pale ochreous. Legs pale putty-coloured, ringed with grey.

This species resembles *umbrosella* in the shape of the wings and the pale fascia, but the black colour of the latter, with its beautiful purple gloss, at once separates the two species. *Mundella* appears to have broader and more sharply pointed wings than either this species or *umbrosella*, but I think that this is partly due to the fact, that the darker colour of the fringe in most specimens of *mundella* causes the wing itself to stand out strikingly, and appear shorter than it is when compared with that of *umbrosella*. The tip of *umbrosella* also appears to be more rounded, owing to the difficulty of seeing where the fringe begins, the fringe itself being rounded on the outside margin. *Mundella* is, so far as my experience goes, quite destitute of a pale fascia, which serves to distinguish it from the new species, in which the pale fascia is distinct and striking (Mr. Stainton says, in answer to my enquiry on this point, "Amongst my *mundella* is one which just shows a ghost of the pale hinder fascia, but in all my other specimens the absence of the fascia is a striking character") ; it also wants the neat clean look of *mundella*, owing to the presence and irregular distribution of so many dark scales.

I propose to call this species *portlandicella*.

Monte Video, near Weymouth :
January, 1890.

DESCRIPTION OF A *NEPTICULA* (*AUROMARGINELLA*) NEW TO SCIENCE FROM NEAR WEYMOUTH.

BY NELSON M. RICHARDSON, B.A.

On the 22nd of October, 1888, I collected some *Nepticula* larvæ mining in bramble leaves, and was much surprised to find that three moths which made their appearance on November 24th and December 7th and 19th respectively of the same year, though somewhat resembling *aurella*, had besides the usual golden fascia, a second one of the same colour, situated on the hind margin of the fore-wing. I do not remember that I bred any other imagines from this jampot of larvæ, but from other batches there emerged one of these peculiarly marked specimens on February 12th, and seven during May, 1889. After this I was more careful, and when I found any bramble *Nepticula* larvæ I kept those from different localities separate from each other. I have, however, so far only bred one more specimen with the golden hind margin on September 30th last. Of this specimen I know the exact locality, which is situated near Weymouth, and it is not improbable that all my twelve specimens came from the same place, as I have been in the habit of occasionally collecting *Nepticula* larvæ from the bramble there. I am not aware that I have bred any from Portland.

I mentioned this *Nepticula* to Mr. W. H. B. Fletcher, of Worthing, when staying with him last May, but though he has bred more *Nepticulæ* than most people, he said that he had never seen this form from bramble. As I could not identify it with any known species, I sent some to Mr. Stainton, asking him for his opinion on them, which he kindly gave me in the following words :—"The *Nepticula* from the bramble with a gold line on the hind margin is quite new to me. I have seen many *aurella*, both British and German, but I never saw anything like these." He also added that he thought that with my *series I might* safely describe the species as new.

I have not yet been able to differentiate the larva from that of *aurella* or other allied bramble species. The only other species of *Nepticula* that to my knowledge occurs in bramble in the neighbourhood of Weymouth is the common *aurella*, which is found everywhere, sometimes abundantly.

The following is a description of the new species, which I propose to call *auromarginella*, on account of the striking character which distinguishes it from all others of its genus:—

Exp. al., 2½—2¾ lines. Fore-wing greenish-bronze, becoming darker and more violet on the basal side, of a somewhat broad, nearly straight, pale golden fascia, which crosses the wing a little beyond the middle; on the extreme hind margin is a similar narrower, crescent-shaped, pale golden fascia; the space between the fasciæ is dark violet, the whole of the wing being beautifully metallic. Hind-wings and fringes grey, with a bronzy glass. Head ferruginous; eye-caps cream coloured or pale ochreous; thorax like the basal half of fore-wing; antennæ, body and legs darker, the legs with light rings.

This species cannot be confounded with any other, on account of its golden hind margin; it resembles *aurella* in some respects, but is smaller, and the basal portion is not brown as in that species, but rather bronze-green.

Monte Video, near Weymouth:
January 7th, 1890.

DESCRIPTION OF THE *MICROPTERYX* OF THE HAZEL (*M. KALTENBACHII*).

BY H. T. STAINTON, F.R.S.

Exp. al., 4—5 lines. Head dark brown, inclining to grey (greyer in the female). Antennæ short, black, about half as long as the anterior wings, thus not so short as those of *purpurella*.

Anterior-wings greenish-bronze, sparingly irrorated with red, with a small triangular pale spot (not sharply defined) at the anal angle; other specimens are more considerably irrorated with red, but the red markings are never so neat as in *purpurella*, *salopiella*, and *Sparmannella*; sometimes the pale ground colour is almost entirely suffused with red, which then appears to be the ground colour, the pale spot at the anal angle being then the only vestige of a marking.

The form first described above is that which best agrees with the original specimens bred by Herr Kaltenbach, and which he had referred to *fastuosella*. In 1862 I visited Aix-la-Chapelle, and called on Herr Kaltenbach, September 17th, never dreaming then that the insect he had bred was a *Micropteryx* till then totally unknown to us; I then thought it must of course be referred to some one or other of the species we knew, and I agreed with Herr Kaltenbach as to their being *fastuosella*, a name which had been given to the more purple forms of the oak-feeding *subpurpurella*, but now that Dr. Wood has enabled me to study a series of specimens bred from the hazel (*Corylus avellana*), I can perceive that it is a distinct, yet very variable, species, of which one of the most striking characters is that the anterior wings are narrower than in any other of the group ; *unimaculella* is a narrow-winged species, but that has the anterior wings broader across at the anal angle than *Kaltenbachii.*

Though years have elapsed since the death of Herr Kaltenbach as this new species had to be named, I could conceive no name more appropriate than that of the excellent observer who first bred the insect, and thereby opened to us the interesting chapter of these larvæ of the larger species of the genus *Micropteryx.*

The larvæ of the smaller species (*calthella*, &c.) are still, as mentioned by Dr. Wood (*ante* p. 6), a sealed book to us.

Mountsfield, Lewisham, S.E.:
January 4th, 1890.

FURTHER NOTES ON DR. JORDAN'S OBSERVATIONS ON NORWEGIAN *LEPIDOPTERA*.

BY W. M. SCHÖYEN,
Conservator at the Zoological Museum of the University of Christiana.

Apparently Dr. Jordan finds it (*ante* vol. xxv, p. 362) still somewhat difficult to convince himself that it was *Satyrus Semele* and *Erebia Ligea* which he did see at Bergen, and not, as he supposed, *Chionobas Jutta* and *Erebia Blandina.* I can, however, assure him that nobody who is familiar with the habits of *Jutta* and with the localities at Bergen, will think it possible that this regular moor butterfly should fly on the rocks there in company with *Semele* ; and, as far as the *Erebia* seen, there also can be no question at all about any other species than *Ligea*, as *Blandina* is not known to occur in Scandinavia.

As for *Vanessa urticæ*, there is, of course, no distinct line to be drawn between the ordinary form and the true var. *polaris*, as the colour darkens quite gradually, owing to the climatical influences. I will, therefore, not at all deny that both at Bergen and in other places in Southern Norway there may be found, now and then, specimens dark enough to pass for "*polaris*," but then as a mere accidental aberration, not as a constant variety. As such a variety, *urticæ* does *not occur at* Bergen.

Going then to the specimen which Dr. Jordan not only did see but really caught, viz., the supposed *Pararge Hiera*, I must at first state, that, as far as known to all Scandinavian entomologists, *Hiera* has with us only one generation, flying in May and June, and never was a specimen recorded to have been observed in the month of August in any locality of Scandinavia. Moreover, at Bergen this species was up to the present time never found, not even in the spring. I therefore *à priori* felt convinced that Dr. Jordan must have confounded *Hiera* and *Mæra*, as he clearly did *Norna* and *Jutta*; and what he lastly (pp. 442, 443) has said about the specimen in question, as also about our Norwegian *Hiera* in general, has only strengthened my conviction in this respect. As for the description he has given of the specimen, none of the mentioned characters are decisive, as they vary in both species. But it strikes me very much that the *most important and distinct character* of *Hiera*, which at once separates it from *Mæra*, is not at all alluded to, viz., *the well-known toothed dark lines across the disc on the upper-surface of the wings.* As these most characteristic and well-marked lines, which are wanting in *Mæra*, are not mentioned either in the specimen from Bergen or in that from Zermatt, they most probably are non-existent, and then it is sure enough that none of the specimens are *Hiera*; they then must fall together. The size of the Norwegian specimen (alar exp., 35 mm.) certainly is a very small one; but, nevertheless, it may for that as well be a dwarfed *Mæra* as a *Hiera*. I should like to see the specimen, for should it, contrary to all probability, yet really be a *Hiera* (and every possibility of an accidental confounding of specimen be excluded), then it would be a remarkable *unicum* as to the time of its appearance.

Besides, that Dr. Jordan is not familiar with the differences between *Hiera* and *Mæra* becomes still more evident, as he further on (p. 443) in a female *Hiera* from the Romsdale and a female *Mæra* v. *Adrasta* finds absolutely no difference whatever on the superior surface, except in the intensity of the colour, &c. As every specimen of our true *Hiera*, male or female, invariably has the above mentioned well-marked cross lines on the wings, which do not occur either in *Mæra* or its variety *Adrasta*, there *must* be a distinct difference.

N.B.—If the supposed female *Hiera* really were such, I have, however, a very strong suspicion that also this specimen, like the former, is a veritable *Mæra*; for a Norwegian *Hiera* with an alar exp. of 50 mm. I never saw in my life—that is just the size of a great *Mæra*. After all, I cannot now help suspecting that Dr. Jordan has not taken any *Hiera* in Norway at all, but only Mæra, which latter often flies as early as the end of June in some localities. Only in this way can I explain to myself what he has written about his specimens; all his observations tend towards such an explanation.

In fact, the three species, *Mæra*, *Hiera*, and *Megæra*, are in our country not at all difficult to distinguish from one another; they are quite distinct and constant, and may be easily separated. Besides I will here call attention to the important discovery of Prof. Aurivillius in Stockholm, that the male scales are quite different in them.*

Also in *Erebia Ligea* and *Euryale* Prof. Aurivillius has found quite characteristic differences in the male scales.† All our Scandinavian specimens are decided *Ligea*, and there seems to be no reason at hand to look at them as a transition to the *Euryale* of the High Alps, from which they may be well distinguished.

On the contrary, the *Melitæa* on Dovrefjeld is a complete connecting link between *Athalia*, *Aurelia* and *Parthenie*, the specific characters of which here run completely together, so that it seems quite impossible to differentiate them one from another, however distinct and constant they may possibly be in other countries.

For Scandinavian Lepidopterists there is nothing new in Dr. Jordan's list of his captures, except that *Sesia scoliæformis* was taken in Romsdale; that is a new locality for this species, though it has been found even in Lapland. As for the other species, they have all been found before both in the same and other localities.

The British Entomologists who might be interested to see what is known about the Lepidopterous fauna of either Dovrefjeld or Romsdale only, I will refer to the lists I have given in "Nyt Magazin for Naturvidenskaberne," Christiania, 1878 and 1881, showing for Dovrefjeld 266 (now about 300), and for Romsdale only, 356 species of *Lepidoptera*. It may perhaps be as well here on this occasion also to mention that the whole number of *Lepidoptera* at present known in Norway is about 1270 species. It will then be seen that our country is not at all so poor, or such a *terra incognita* in this respect, as it seems to have been thought by perhaps the majority of British collectors.

Christiania, Norway:
December 12*th*, 1889.

P.S.—Since writing the above, I have received, through the kindness of Mr. G. T. Baker, a coloured drawing of Dr. Jordan's supposed Bergen *P. Hiera*, which decides the question in the most decisive manner.—W. M. S.: *January* 11*th*, 1890.

Errata.—In my former notes, p. 323, line 3, the date of year 1887 should be 1877.

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* "Bihang till Kgl. Svenska Vetensk. Akad. Handlingar," Band 5, No. 25, Stockholm, 1880; "*Ueber sekundäre Geschlechtscharaktere nordischer Tagfalter*" (pp. 11, 12).

† "*Entomologisk Tidskrift,*" Stockholm, 1883 (pp. 33—35).

ON THE *COLEOPTERA* FOUND IN A SMALL MOSSY BANK AT KNOWLE, WARWICKSHIRE.

BY W. G. BLATCH.

Believing that few if any other Coleopterists have ever tried the experiment of working persistently at one particular spot of ground, with the view of ascertaining how many species could be obtained from it, and most of my beetle collecting this year having been carried on in strict accordance with such an idea, it has occurred to me that a short account of my experiences might prove interesting, if not useful, to the readers of the Entomologist's Monthly Magazine.

Near the end of last March I discovered at Knowle a small mossy bank which, after a few trials, seemed sufficiently promising to be worth operating upon continuously. Here I plodded on through April and May, and again in October and November, with an occasional raid during the summer months, meeting with an amount of success which, to me, seemed astonishing. Altogether this little bank has yielded 412 species of *Coleoptera*, many of them in great abundance; some twenty of these were new to my collection, or had not been previously taken by myself in any other locality, and eighteen or nineteen of them appear to be additions to the Midland List. If we reckon that there are 3250 species of beetles inhabiting Great Britain, it will be seen that this tiny spot in the centre of England has produced about one-eighth part of the whole number hitherto found in England, Scotland, Wales and Ireland.

Although, at first sight, there seems to be nothing peculiarly striking about this bank, I have satisfied myself, by careful study and enquiry, that it presents certain features which, to some extent, account for its phenomenal richness. It is situate in the middle of an extensive patch of Keuper Marl, and is surrounded by a considerable area of country which was unenclosed until within the last forty or fifty years. From Knowle (407 feet above sea level) and the adjacent district there is a gradual fall towards the field which contains the bank in question, and sundry streamlets flow from the higher ground and merge their waters in the hollow at the bottom, known by the suggestive appellation of "Rotten Row." Being always wet, even in the driest season, this land produces a flora of great variety and rankness. The owner informs me that it has been in continuous pasture for more than 200 years, and that previously it formed an inaccessible bog which was with much difficulty drained by one of his ancestors. During a considerable part of every year these meadows are grazed by cattle, and, with their boundary hedge-banks, have in all material respects remained absolutely undisturbed for a period of over two centuries. The particular bank about which I am writing is placed in a middle position between the highest and lowest portions of the ground, it extends almost due east and west, has a hedge and slight ditch on its south side, and presents a more or less sloping surface to the north, this being the portion from which all the specimens referred to have been taken. The soil to some depth is thickly matted with the roots of various plants, and is covered above with a carpet of moss (*Hypnum*).

Now, taking all these facts into consideration, we must allow that the conditions are extremely favourable to the production and maintenance of an extensive and varied insect fauna. We know from experience gained elsewhere how partial insects are to fens and bogs, and the fact that this land was once a morass, is evidence, *prima facie*, that it was originally tenanted by the usual bog species, many of which would doubtless cling to their native habitat long after its boggy nature had been modified, the more so, as the marshy character of the ground was still to some degree maintained, and the usual flora lingered on, although, doubtless, shorn of its pristine variety and luxuriance. Being also, in a small way, the watershed of a district formerly bordered by heaths and commons, there can be no doubt that numerous insects, especially *Coleoptera*, were from time to time brought down from the higher regions to find a permanent home amongst the more natural denizens of the swamp. Having been a "permanent pasture" for so long a period, and producing such a variety of plants, these fields must have proved unusually favourable for the breeding and multiplication of every species which found a lodgment there. Then the fact that cattle have browsed in these meads from time immemorial is sufficient to account for the incursion and settlement of those grosser species that take to dung, either as a delicacy or as a nidus for their progeny. Another consideration, worth perhaps a passing thought, is that this district formed in the remote past a part of the once dense and extensive Forest of Arden.

The mossy bank being midway on the slope is just high enough for those insects that love moderately high ground, and just low enough to afford desirable quarters for those that delight in moisture.

Up to the present time I have worked the bank in only one way, taking simply those species that reside in the moss, the roots of plants, and in the soil, carefully excluding such as might have been captured by searching and sweeping the herbage, and which must be classed as summer and therefore, perhaps, fugitive visitants. It is worth noting that I found nothing in the summer time which did not also occur in the spring and autumn; but it was rather a revelation to me to learn, as I did from practical experience, that most of the species that occurred in the early and late months of the year, and which I concluded were then in their winter quarters, and would be off and away when the warm weather set in, were to be turned out of the moss and soil in the hot months as certainly as in the colder seasons.

Many of these beetles were obtained by simply plucking up the moss and shaking it over paper; but the most productive method was to cut out a slice of the bank and carefully knock it to pieces with the trowel. Several species were found to have penetrated as much as six or eight inches into the earth, at which depth I have frequently come upon large colonies of *Clivina fossor*, *Anchomenus parumpunctatus*, two or three species of *Lathrobium*, and other beetles.

It is somewhat curious that I have captured here two species which hitherto I had never found except in fungi, viz., *Homalota marcida* and *Liodes humeralis*.

My visits have always been of short duration, but I never went without taking something fresh, sometimes two or three, and at others as many as twenty or thirty additions.

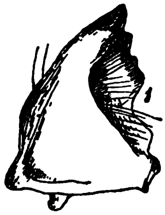
Without attempting to give a complete summary of my captures, I may say that besides nearly all the species of *Tachyporus* and many of *Stenus*, I have taken here 9 species of *Amara*, 8 of *Cercyon*, 11 of *Choleva*, 51 of *Homalota*, 9 of *Quedius*, and 23 of *Philonthus*.

A full list of species being probably too long to be inserted in the Magazine, it must suffice to mention the following as amongst the more interesting of my finds:—*Cychrus rostratus*, *Amara acuminata*, *A. lunicollis*, *A. nitida*, *A. continua*, *Helophorus dorsalis*, *Choleva spadicea*, *Colon brunneum*, *Scydmænus Sparshalli*, *Oxypoda spectabilis*, *Homalota oblongiuscula*, *H. linearis*, *H. pilicornis*, *H. ignobilis*, *H. atomaria*, *H. intermedia*, *H. parva*, *H. testudinea*, *H. pilosiventris*, *Encephalus complicans*, *Philonthus addendus*, *P. lucens*, *Actobius prolixus*, *Lathrobium longulum*, *Oxytelus Fairmairei*, *Deliphrum tectum*, *Coryphium angusticolle*, *Homalium septentrionis*, *H. exiguum*, *Meligethes obscurus*, *Corymbites pectinicornis* (♂ and ♀, November), *Apion difforme*, *Orobitis cyaneus*.

214, Green Lane, Smallheath, Birmingham:
***December 5th*, 1889.**

NOTES ON THE METAMORPHOSES OF TWO SPECIES OF THE GENUS *TINODES*.

BY KENNETH J. MORTON.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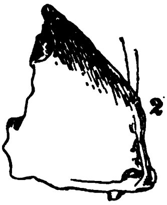
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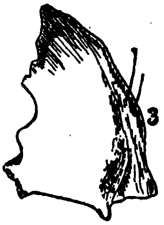
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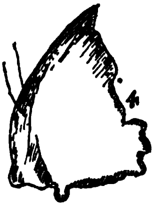
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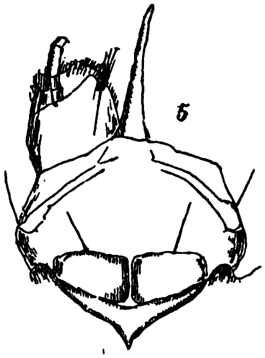
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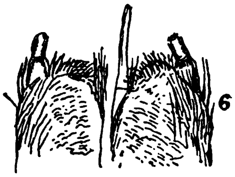
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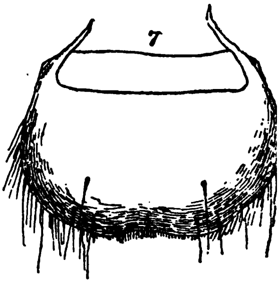
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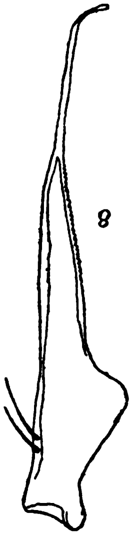
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During the past season I have had the opportunity of studying the preparatory states of *Tinodes wæneri*, L., and *T. aureola*, Zett., and have found them to possess many peculiarities of habit and of structure. As far as I know, little or nothing has been written on the habits of the larvæ and nymphs of the European species of the genus, with the exception of Pictet's short notice (*Hydropsyche maculicornis*, Recherches, p. 213, pl. xviii, fig. 2), and no details of structure appear to have been published. The following account may, therefore, be of service.

The localities frequented by *T. wæneri* and *T. aureola* respectively differ considerably from one another in character, the first-named insect preferring lakes, rivers, and streams of more or less importance; whereas, on the other hand, the second haunts springs and little streams, especially where these run down nearly perpendicular rocks. Sometimes, it is true, *Tinodes aureola* swarms along *rivers* with rocky banks, but I think it will always be found in such cases to be attached *not to the rivers* themselves, but to the dripping rocks on the sides.

In support of the latter idea, I may mention that I long failed in my attempts to rear *T. aureola* until I discovered that the larva would only live in the shallowest of water; and besides, the tarsi of the middle pair of legs in the nymph have no fringes, the absence of which is characteristic of species frequenting springs, or rocks wetted with the spray of the water falls (*cf.* Fritz Müller, Trans. Ent. Soc. Lond., 1879, pp. 132—138).

While thus the larvæ of *T. wæneri* are often found at considerable depths, and those of *T. aureola* are usually little more than covered with water, the habitations of the two species hardly differ, save in size, and consist of a long ribbon-like web, externally strengthened by slight additions of sand grains and other matter, attached by its edges to rocks and large stones in serpentine fashion, thus forming a kind of half cylinder, the diameter of which is just exactly sufficient to admit of the larva turning itself. These covered canals are rapidly made, and are often very long; one belonging to *T. aureola* is noted by me as 2 mm. in breadth and 23 mm. long; these measurements, however, are often exceeded, and in *T. wæneri* may reach double the foregoing figures or more. They are usually partially closed at one end, being rounded off and perforated with little holes; but they are constantly undergoing change or extension, and as the larvæ seem to obtain their food principally by consuming large quantities of mixed matter, such as adheres to rocks and stones, they probably serve as covered ways for the inmates in their search for fresh feeding grounds. Of course quantities of edible matter will also be carried into the canals on the currents caused by the flexions of the larvæ. The abundant frass is composed largely of sand, and takes the form of very long cylindrical pellets. Perhaps, rarely, these larvæ are predaceous.

In most of the instances which have come before me in rearing these insects, the nymph-cases have been elongated cells strengthened with sand grains, constructed within the larval habitations. A nymph-case of *T. wæneri* was made in the angle at the bottom of a small bottle, and was an elongated silken cell, only very slightly strengthened with extraneous matter (probably on account of its not being at hand), with a network at either end, one of them placed a little towards the upper-side of the case, rather than at the actual extremity. Length, 7½ mm.

Klapálek, in his useful essay, "Metamorphose der Trichopteren," divides the larvæ of caddis-flies into two Sections, indicated by the terms—"*raupenförmig*" and "*campodeoid*." The larvæ now under consideration belong to the second form, and the term is for them (as well as for the other Hydropsychid larvæ which want tracheal branchiæ) exceedingly appropriate. They are rather slender, cylindrical, their segments of nearly uniform breadth, save that the head, prothorax, and ante-penultimate segment are rather, and the last segment much, narrower. The head (apart from the trophi) is a short oval, a little depressed, clypeus truncate anteriorly; eyes placed very near the front and just above the sides; antennæ consisting of a hemispherical base carrying a long hair and two short ones (at least I consider these represent the antennæ from the position they occupy). Labrum broadly elliptical, anterior margin slightly excised, eight marginal and two discal bristles or hairs, a fringe of hairs on either side of the excised part, which part is densely ciliated with very short hairs placed inferiorly. Mandibles, *in situ*, irregularly triangular in outline; right seen from above has two teeth below the apex on the upper edge and three on the lower; between the two edges is a fringe of hairs; in the left the teeth are not so numerous or are less distinct; two hairs or bristles on the back of each mandible (the details of the teeth are especially applicable to *T. aureola*; *T. wæneri* presents slight differences, but the general aspect of the mandibles is alike in both species). Maxillæ large and broad, apex closely beset with short hairs and bristles or bristle-like processes, a pencil of long hairs on the inner margin, a bristle on the under-side about the origin of the palpi; these are four-jointed and tapering, the first two joints short and about equal in length, the third double the length of the preceding, and the fourth smallest of all. Labium with two sub-quadrate basal plates, each bearing a bristle; a bristle at each side; spinneret of great length and slender, tapering to a point.

Prothorax (which, like the head, is chitinous, and very sparsely beset with long hairs) transverse, hardly broader than the head, narrowing slightly posteriorly. Pronotum straight in front, hind angles rounded: prosternum small, running into a point between the fore legs. The other thoracic segments are not chitinized, but are like the abdomen. The legs are short, sub-equal; anterior pair much the strongest, and perhaps just a little longer than the others, from which the fore-legs differ in having the tarsi ciliated; claws of all the pairs with a short basal spine, and in the hollow between it and the claw there is a single hair. The tibiæ also bear a spine or two, and the whole of the legs bear a few scattered hairs. Articulated to the coxæ of the first pair of legs in all the *campodeoid* larvæ that I have seen, is a process which is usually long and slender, but which in *Tinodes* is rather broad.

The segments of the abdomen are distinct. The anal limbs are of moderate length, two-jointed, a short basal joint, and a long joint bearing at its apex above a pencil of about six very long and strong hairs; attached to the under part of the apex of the second joint is the strong claw which also carries a number of small hairs, and on its under-side (in *T. wæneri*) five or six sharp teeth. The anal filaments are five in number (in *T. wæneri*; number not ascertained in *T. aureola*, but probably the same), two lateral pairs and a single median filament. These filaments are of great interest and importance, as Fritz Müller is of opinion that they are alternative breathing organs and function as true branchiæ ("Blutkiemen"), like those of the stalk-eyed Crustacea, and not in the same way as the lateral filaments found in most Trichopterous larvæ (*vide* Ent. Nachrichten, 1888, pp. 273—277).

The following notes refer to the colours of the larvæ of the two species:—*T. wæneri:* bright green, back of meso- and metathorax and abdominal segments tinted with brownish-grey. Head pale green; clypeus fuscous; posterior part also fuscous, broken up into spots behind the eyes. Prothorax fuscous; four pale spots on back and two pale patches on the sides. *T. aureola:* head and prothorax brown, sprinkled with pale points, and pale about the eyes; other segments of a reddish-brown colour on back. The larvæ of this species have none of the pretty green colour usually so conspicuous in those of the preceding species.

The most noteworthy character in the nymphs is to be found in the mandibles; these consist of a long sub-triangular basal part, whose inner margin is indistinctly serrate, and a slender distal part ending in a hook. Labrum nearly semicircular; a group of about five hairs on either side near the base. The back of the abdomen has the usual small corneous plates, and these are arranged in the following manner:—

2nd segment near its base with two nearly circular plates, which posteriorly bear three or four backward directed teeth.

3rd segment near its base with two nearly circular plates, which posteriorly bear three or four backward directed teeth.

4th segment near its base with two nearly circular plates, which posteriorly bear four or five backward directed teeth.

5th segment near its base with two nearly circular plates, which posteriorly bear five or six backward directed teeth, on its hind margin with two large transverse plates, which carry a comb-like row of six or so large teeth and a series of smaller ones, all directed forward.

6th segment with two narrow plates situated on the extreme anterior margin; their rounded anterior part almost overlaps the preceding segment, and that part bears a semicircle of backward directed teeth, which are more upright than those on the other segments. These plates are placed closer together than usual, and lie between the two large transverse plates of segment five.

7th and 8th segments as in 4th or 5th.

The plates of 2nd segment are least conspicuous, and those of the 5th are rather larger than the others. These details refer more exclusively to *T. aureola*; in *T. wæneri* the plates have usually a tooth or so more. The abdomen terminates in two side processes rounded at the point, and bearing a pencil of long hairs; these processes are covered with minute points, which in certain aspects look like teeth. In addition to these upper processes, the ♂ nymphs have two rounded inferior lobes. There are no external respiratory filaments present.

Comparing the larvæ of *Tinodes* with those of other genera of the *Hydropsychidæ*, perhaps the most characteristic parts in *Tinodes* are the maxillæ and spinneret, the latter being especially peculiar; the anterior legs also are much stouter than is usual amongst the

Hydropsychid larvæ without respiratory filaments, and the anal limbs with their pencil of hairs are rather suggestive of the typical genus *Hydropsyche* than of any other. The mandibles in the nymphs of *Tinodes* are unique; the only thing known to me at all analogous to them occurs in the nymph of *Odontocerum albicorne*: unfortunately, in all nymphs which escape from their cases in the ordinary way, the slender hooked part is invariably broken off. These nymphs agree in their anal parts pretty closely with those of the *Plectrocnemia-Polycentropus* group, but they differ from that group and agree with the *Philopotamus-Wormaldia* in having no respiratory filaments.

EXPLANATION OF FIGURES.

LARVÆ.

Fig. 1—Left mandible from above (*Tinodes aureola*).
„ 2—Right „ „ „ „ „
„ 3—Left „ „ below „ „
„ 4—Right „ „ „ „ „
„ 5—Labium (maxillæ and spinneret) from beneath (*Tinodes aureola*).
„ 6—Maxillæ from above (*Tinodes waneri*).
„ 7—Labrum „ „ „ „

NYMPH.

„ 8—Mandible from beneath (*Tinodes aureola*).

These figures are all drawn with a Zeiss A objective.

Carluke, N.B.: *October*, 1889.

OBSERVATIONS ON *COCCIDÆ* (No. 6).

BY ALBERT C. F. MORGAN, F.L.S.

Genus DIASPIS. Costa.

1. DIASPIS OSTREÆFORMIS.

Diaspis ostreæformis, Signoret, Ess. s. Coch., pp. 60, 121, 441, pl. v, fig. 4; ? *Aspidiotus circularis*, Fitch, 3rd Ann. Rep., 1856, p. 426; *nec Aspidiotus ostreæformis*, Curt., Gard. Chron., 1843, p. 805; *nec Aspidiotus furfurus*, Fitch, 3rd Ann. Rep., 1856, p. 352; *Coccus Harrisii*, Walsh, Prairie Farmer, May, 1860; *Aspidiotus Harrisii*, Walsh, Rep. St. Ent., Illinois (1868), p. 53; *Diaspis Harrisii*, Signoret, Ess. s. Coch., p. 442; *Chermes pyri*, Boisduval, Ent. Hort. (1867), p. 315; *nec Chermes pyri*, Linné; *Diaspis ostreæformis*, Comstock, 1st Ag. Rep., p. 311, pl. xv, fig. 4, 2nd Rep. Corn. Exp. St., p. 94.

This species was confounded with *Aspidiotus ostreæformis*, until Mr. Douglas showed the differences (Ent. Mo. Mag., vol. xxiii, p. 239). Prof. Comstock quotes Signoret as stating that the species is the same as found by Fitch in New York, and described by him under the name *Aspidiotus circularis*. But Signoret seems to have identified his

Diaspis ostreæformis not only with *A. circularis*, but also with *A. furfurus*. It is only in his "Table générale des espèces" (*op. cit.*, 502) that he mentions *A. circularis* as equivalent to *Diaspis ostreæformis*, but in his description (p. 123) and catalogue (p. 60) he regards *A. furfurus*, Fitch, as a synonym of *D. ostreæformis*. *A. furfurus* has, however, been proved from examination by Comstock to be a different species (1st Ag. Rep., 1880, p. 315). Signoret states that *Diaspis Harrisii*, described by Walsh in "Pract. Ent." (1866), vol. ii, p. 31), is also a synonym of *D. ostreæformis*, and is very precise on this point, saying (*l. c.*) "l'ayant reçue dans ces derniers temps nous avons pu nous en assurer." Comstock says that "this statement is evidently a mistake." I have not seen Walsh's account of his species which he appears to have first named *Coccus Harrisii*, but I presume from the name that he considered it identical with the species described by Harris, but not named (Harr., Treat. on Ins., 1852, p. 220), and it appears to me that perhaps here has occurred the mistake. It must be remembered that Harris mentions two species, one which he considered as the *Coccus cryptogamus*, Dalman, and which Comstock considers approaches *Chionaspis furfurus*, Fitch, Comst., and another which he says resembles "in shape" one which was described by Réaumur in 1738. Now Réaumur's insect we know is a *Mytilaspis*, and the shape is, of course, perfectly different to the *Diaspis ostreæformis*. Therefore, as Signoret so definitely states that his *D. ostreæformis* is the same as Walsh's species which he received, I think, perhaps, we should accept that statement; in which case it follows that Walsh's species is not the same as that of Harris, and, consequently, *Coccus Harrisii*, Walsh, *Aspidiotus Harrisii*, Walsh, and *Diaspis Harrisii* become synonyms of *D. ostreæformis*. Signoret named the species *D. ostreæformis* believing it to be identical with the *A. ostreæformis* described by Curtis in 1843, but as this has already been shown by Mr. Douglas to be an error, the name *Diaspis Harrisii* would have priority. On the other hand, it seems probable that *A. circularis*, Fitch, is identical, although it cannot be stated with certainty, as Prof. Comstock, who has seen Fitch's collection, says (Comst., 2nd Rep. Corn. Un. Exp. Stn., p. 94), that "from the fragment of scale in the private collection of Fitch it would be impossible to recognise the species." But I see nothing in Fitch's description of his species as quoted by Signoret (*op. cit.*, p. 439) to prevent it from being the *D. ostreæformis*, although the description is very imperfect, and might apply to many *Aspidioti*. On the whole, although the specific name *circularis* has priority, if the species is the same, and if not, then *Harrisii*; yet as there is uncertainty about the former, and the latter name is inappropriate, I apprehend it will be most convenient to maintain the name *D. ostreæformis*.

I may mention that the female *Diaspis ostreæformis* when alive is red, with yellow abdominal regions. Having been described and figured by Comstock, it is unnecessary for me to give any particulars. It does not appear to have been found yet in the British Isles. It has been found in California, as mentioned by Comstock, whilst Signoret has found it in France, and I have found it common on pear trees in Portugal. Maskell does not mention it as having been found in New Zealand, although his *Diaspis santali*, found on pear, plum, &c., would not appear to be very dissimilar, if it were not for the absence of the grouped glands.

2. DIASPIS BOISDUVALII.

Diaspis Boisduvalii, Signoret (1868), Ess. s. Coch., p. 114, pl. v, figs. 1 and 2; Comstock (1883), 2nd Rep. Corn. Un. Exp. Stn., p. 86, fig. 9; Maskell (1887), New Zeal., Scale Ins., p. 46, pl. iv, fig. 5.

This species, discovered by Signoret on orchids in the Luxembourg conservatories, is artistically figured by him, and Comstock's descriptions and figures render it easy of recognition. I have found both ♂ and ♀ scales on orchid leaf received from Mr. Douglas. Comstock found it on *Ravenala madagascariensis* and *Livistonia*, in conservatories; and Maskell finds it on hothouse plants and on wattle in gardens in Wellington.

3. DIASPIS ROSÆ, Bouché.

The synonyms and references to authors have all been given by Mr. Douglas (Ent. Mo. Mag., xxiv, p. 23), and Comstock has furnished full description and figures.

My specimens I took from a mango leaf received by Mr. McIntire from Demerara, and sent on to me by Mr. Douglas. I have not yet found the species in Portugal; and from Mr. Douglas' extract (*l. c.*) from a letter from Mr. Parfitt, of Exeter, it appears to be uncommon in England. Comstock says it is common on roses in the States, and Maskell found it on rose trees in New Zealand; whilst Boisduval and Signoret both mention it as common on roses.

4. DIASPIS ZAMIÆ, *n. sp.*

♀ scale circular, very convex, white, farinose, frequently with fluted sides. Diameter, about 1·8 mm. Exuviæ lateral. First larval skin naked, within the marginal limits of the second, but placed anteriorly. Second skin elliptical.

♀ adult, about, 9 mm. diameter. No grouped ventral glands. Median dorsal lobes large, divergent posteriorly, with inner lateral margins serrated. Opposite to the bases of the dorsal lobes, a pair of small ventral lobes, with pointed apex. Three duplex lobes on each side of the median pair, and beyond these the margin is dentate. A pair of cœcal spinning glands will be found close to the margin, anterior to each 2nd, 3rd, and 4th lobe, and another similar pair beyond, also close to the margin. One similar solitary gland between the bases of the dorsal lobes. A simple plate between 1st and 2nd lobes, two between 2nd and 3rd, and two between 3rd and 4th, with about six along the margin as far as the commencement of the first distinct segment. A stout spine adjacent to the base of each lobe, and a fifth on the margin, about midway between the 4th lobe and the first distinct segment.

I found this species in the conservatories of Señr. Loureiro, in Oporto, on the stem and leaves of *Zamia villosa*. I have classed it in the genus *Diaspis*, for although I have not found the male, I think it cannot be an *Aspidiotus*, as in all the species of this genus that I have seen, the 1st larval skin lies in the centre of the 2nd. It seems to me that the relative position of the exuviæ to one another, is a very constant character in the *Diaspina*, and is consequently of some importance.

Villa Nova da Gaya,
Portugal: 1889.

DESCRIPTIONS OF SOME NEW SPECIES OF SOUTH AMERICAN *HALTICIDÆ*, OF THE GROUP *ŒDIPODES*.

BY MARTIN JACOBY, F.E.S.

ALLOCHROMA FRUHSTORFERI, *n. sp.*

Black; head and thorax flavous, closely punctured and sparingly pubescent elytra metallic dark blue, the base swollen, finely punctate-striate, sparingly clothed with single erect black hairs. Length, 1½—2 lines.

Head sparingly punctured at the vertex, the latter fulvous, the lower portion flavous; maxillary palpi strongly incrassate, black; antennæ black, the third joint the longest, the following ones slightly and gradually shortened, extending to half the length of the elytra; thorax subquadrate, scarcely one-half broader than long, the sides straight, very slightly narrowed towards the base, the surface strongly transversely depressed at its posterior half, the anterior portion rather swollen, the disc strongly and rather closely punctured, clothed with some yellow pubescence, only visible in certain lights; scutellum piceous; elytra distinctly raised at the base, this portion limited by a transverse depression, the punctures very distinct and rather closely placed, a little deeper at the base than posteriorly, the interstices flat and very sparingly clothed with erect black hairs; under-side and legs black; posterior tibiæ armed at the apex with a double spur; claws appendiculate.

Hab.: Brazil, St. Catharina, Rio Capivary.

Two specimens which I refer to the present genus were kindly given to me by Herr Fruhstorfer, who obtained them at the above locality.

PERIBLEPTUS METALLICUS, *n. sp.*

Broadly ovate, rufous; the antennæ, the apex of the femora and the anterior tibiæ and tarsi, black; head and thorax rugosely-punctate; elytra metallic greenish-blue, sparingly pubescent, finely punctate-striate, the interstices finely wrinkled. Length, 2½—3 lines.

Head coarsely and closely rugose, the penultimate joint of the palpi incrassate, piceous; antennæ more than half the length of the body, black, the third joint much longer than the first, and the longest, the following gradually reduced in length; thorax about one-half broader than long, narrowed at the base, sub-angulate before the middle, the angles acute, the surface rugose like the head, with two rather deep basal depressions, divided by a raised longitudinal space, the disc impubescent, rufous; scutellum fulvous, broad; elytra with a slight transverse basal depression, the space surrounding the scutellum raised, of a bright metallic greenish-blue colour, moderately strongly punctate-striate, the punctures more deeply impressed at the anterior portion, the interstices irregularly and rather obscurely wrinkled, with a few stiff hairs: under-side and legs fulvous, clothed with yellow pubescence, the anterior tibiæ and tarsi black; posterior tibiæ with a single spine; claws bifid.

Hab.: Bogota.

PERIBLEPTUS ECUADORIENSIS, *n. sp.*

Fulvous; the antennæ, anterior legs and the posterior tibiæ, black; head nearly smooth; thorax rugosely punctured; elytra dark violaceous, finely punctate-striate.

Length, 3 lines.

Head with a few fine punctures; antennæ as in the preceding species; thorax twice as broad as long, the sides obtusely angulated before the middle, the surface finely rugose, sparingly clothed with fulvous pubescence, obsoletely depressed at the base; scutellum fulvous; elytra without basal depression, finely punctate-striate, the interstices finely rugose; impubescent; below fulvous, the apical portion of the femora and all the tibiæ and tarsi, black; claws bifid.

Hab.: Ecuador (*Buckley*).

P. ecuadoriensis is closely allied to *P. metallicus*, but differs in the nearly smooth head, the more transverse thorax, the want of an elytral depression, and their dark violaceous colour. I possess a single specimen.

OCTOGONOTES APICICORNIS, *n. sp.*

Broadly ovate, moderately convex, entirely pale fuscous, pubescent; the terminal four joints of the antennæ black; thorax rugosely punctured; elytra deeply punctate-striate, the interstices convex, covered with short golden pubescence.

Length, 3 lines.

Head finely rugose, foveolate between the antennæ, the space below the latter deeply transversely depressed, labrum fulvous with four deep punctures placed transversely, apex of jaws black; antennæ half the length of the body, fulvous, the four last joints black, thickened and shorter, the third and fourth joints equal; thorax transverse, the sides sub-angulate before the middle, the anterior angles produced, the disc with a distinct semicircular depression near the base, closely and finely rugose throughout, not pubescent; scutellum triangular; elytra broad with a very obsolete post-basal depression, the punctures deep except near the apex, the interstices rather distinctly longitudinally convex, clothed with very short golden pubescence; the apex of the posterior tibiæ bimucronate; claws appendiculate, the inner division rather long.

Hab.: *Brazil*, St. Catharina, Rio Capivary (*Fruhstorfer*).

The entirely ferrugineous colour of this species, with the exception of the apical joints of the antennæ, the rugosely punctured head and thorax, and the general broadly ovate form, will assist in its recognition. A single specimen in my collection.

ZETETICUS BIFASCIATUS, *n. sp.*

Fulvous, pubescent; palpi robust; head and thorax granulate-punctate; elytra very finely punctate-striate, clothed with fulvous pubescence, a transverse band at the base, and a broader one below the middle, violaceous-blue; claws bifid.

Length, 3 lines.

Head closely and strongly punctured, fulvous; antennæ filiform, entirely dark fulvous, pubescent, the third and fourth joints elongate, of equal length, the rest gradually shortened; thorax one-half broader than long, transversely depressed near the base, the sides nearly straight, very obtusely angulate before the middle, the surface very closely and rather finely punctured, clothed with fulvous pubescence; scutellum fulvous; elytra scarcely visibly flattened near the suture, very finely punctate-striate, the flavous portion closely pubescent, the violaceous bands more shining, the first not quite extending to either the basal or lateral margin, widened towards the suture, the second band broader, placed below the middle across the elytra, but also interrupted at the sides; posterior tibiæ with a single spine.

Hab.: Peru. A single specimen.

Peribleptus, Clark (changed later on by von Harold to *Zeteticus*), seems to me the most suitable genus for the reception of the present species, on account of the incrassate palpi, the single tibial spur, and the bifid claws; the elytral pattern resembles several other known species belonging to different genera.

(*To be continued*).

Sterility of Typhlocybæ caused by the larvæ of parasitic Hymenoptera and Diptera.—In the current volume of the "Comptes Rendus des séances de l'Académie des Sciences" is an article, dated July 8th, by M. Alfred Giard, on the parasitism of a certain species of *Typhlocyba*, by Hymenopterous and Dipterous larvæ, the former living in an external attached sac, the latter within the body of the host; their modes of life and ultimate development are given, but in neither case is the species determined. Further observations by the author have been made this year, the results appear in the "Comptes Rendus" of the 4th November, and are so interesting that I transcribe the greater part of them, as follows:—

"The larvæ of *Hymenoptera* and *Diptera* parasitic on the *Typhlocyba* that I mentioned in a former communication belong, as regards the former, to *Aphelopus melaleucus*, Dalman, and the latter to *Atelenevra** *spuria*, Meig. (*A. velutina*, Macq., *Chalarus spurius*, Schiner). I bred both these insects in captivity; like their hosts they have two generations in a year. One proceeds from nymphs formed during the last fortnight of June, is disclosed at the beginning of July; the other infests the second generation of *Typhlocyba*; it assumes the nymph form towards the end of September or in October, and probably passes the winter in this state, and is perfected in the following spring.

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* *Recte Ateloneura, cf.*, Scudder's "Nomenclator Zoologicus," p. 31.—J. W. D.

"If these observations are connected with the facts previously made known by Perris (parasitism of *Dryinus pedestris*, Dalm., on *Athysanus maritimus*, Perris) and by J. Mik (parasitism of *Gonatopus pilosus*, Thoms., on *Deltocephalus xanthoneurus*, Fieb.*), it becomes very probable that the Family *Dryinidæ* (*Proctotrupidæ*) are generally parasites of *Homoptera* (*Jassidæ*). On the other part, in comparing the result of our researches with those formerly given by Boheman on the infestation of various *Cicadellæ* by the larvæ of *Diptera*, and in particular of *Cicadula virescens*, Fall. (*Thamnotettix sulphurella*, Zett.), by the larvæ of *Pipunculus fuscipes*, Fall., it becomes equally probable that the *Diptera* of the Family *Pipunculidæ* are, in general, parasites of *Homoptera* of the Family *Jassidæ*.

"We have been enabled to obtain in abundance, and to study more completely than has been done previously, Dipterous and Hymenopterous parasites of *Typhlocyba* hitherto deemed extremely rare and captured accidentally. We have also been led to observe some very curious effects of parasitic castration produced by these parasites upon their hosts.

"The *Typhlocybæ*, with yellow or pale elytra, form a small group of species often living side by side on the same trees, and presenting among them a mimetic resemblance so perfect that it is almost impossible to distinguish them, even by the most minute examination of the exterior characters. To Mr. James Edwards, of Norwich, is due the merit of having recently drawn attention to the very distinct differential characters derived from the form of the genital ármature of the male for the separation of the several species.†

"In reliance on the studies of this acute investigator, we have recognised that the *Typhlocyba* of the horse-chestnuts, referred to in our previous notice under the name of *T. rosæ*, belongs in reality to two distinct species, *T. hippocastani*, Edw., and *T. Douglasi*, Edw., equally common on the trees of the Luxembourg. These two species may be parasitised by *Aphelopus* and by *Atelenevra*; but *Aphelopus* infests especially *T. hippocastani*, and much less often *T. Douglasi*; on the contrary, *Atelenevra* is almost always found in *T. Douglasi*, and very rarely in *T. hippocastani*."

Examples are given of the enervating effect of the action of the parasites on the genitalia of both sexes of *Typhlocybæ* in producing alteration and atrophy of structure and consequent abortion of function, and finally the death of the insects.

Another result of the parasitism is thus stated:—

"Modifications, not less important, are seen in singular organs not hitherto noticed, as far as I am aware, which exist in the males of *T. Douglasi* and *T. hippocastani*, the function of which is quite enigmatical. They consist of two invaginations of the integument that divide the ventral surface of the first segment of the abdomen and reach, like fingers of a glove, up to the extremity of the fourth segment, and sometimes a little beyond. These organs appear to me to be homologous with the phonetic apparatus of the male *Cicadæ*. Among the males of *T. Douglasi* and *T. hippocastani* infested with *Atelenevra* and *Aphelopus*, the ventral invaginations are greatly reduced; generally they do not reach the second segment of the abdomen, and often exist only as two small gussets on the first segment."

The author then goes on to notice some variations in the structure and colour of the *Aphelopus*; and he adds, that under the name of *Atelenevra spuria* are possibly confounded different allied species, a question that may be easily solved by rearing the larvæ collected with the *Typhlocybæ*.—J. W. DOUGLAS, 8, Beaufort Gardens, Lewisham: *November* 30*th*, 1889.

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* *cf.*, *Ent. Mo. Mag.*, vol. xix, p. 116.—J. W. D. † *cf.*, Ent. Mo. Mag., vol. xxv, p. 157.—J. W. D.

Lobophora polycommata: habit of larva.—Some few years ago I had a batch of eggs of *L. polycommata*, and, on hatching, supplied the young larvæ with their supposed food-plant, honeysuckle, which they declined to touch. I then tried them with leaves and buds of other shrubs and trees, and at last had the satisfaction of seeing them begin to gnaw holes in the leaf-buds of privet. In a short time every larva had eaten its way into one of these buds, and made itself at home. When one bud was hollowed out, the larva would enter another, and so on until they were half an inch long, when they all came out and fed openly upon the leaves, and were reared without difficulty. I have no doubt that privet is a favourite food-plant with this species, and the hollowing out of the leaf-buds its usual habit when young.—SYDNEY WEBB, Maidstone House, Dover: *January*, 1890.

Callimorpha Hera in Devonshire 17 *years ago.*—On looking over a few *Lepidoptera* belonging to the Rev. R. Peek, of Swelling, near Saxmundham, I observed two specimens of *C. Hera.* These, he informs me, were taken by himself about 17 years ago near Hazelwood, which is on the little river Avon, in Devonshire. I think that at that time *C. Hera* was scarcely recognised as a British insect; hence this capture is worthy of record. Hazelwood is, I find, near Loddiswell.—E. N. BLOOMFIELD, Guestling: *January 8th*, 1890.

A new British Retinia.—One of the pleasant incidents of our recent visit to Liverpool was a trip by Mr. Sydney Webb and myself, with our kind and genial host, Mr. Capper, to Preston, for the purpose of examining Mr. Threlfall's exquisite *Tineina*, and Mr. Hodgkinson's extensive collection of *Lepidoptera* generally. Here, while looking through the *Tortrices*, we came upon a specimen placed in Mr. Hodgkinson's series of *Retinia-pinivorana* which was evidently a stranger, and unknown to us all. After some trouble, and with help from Mr. Stainton, I have been able to recognise it as *Retinia margarotana*, H.-S., Hein., a native of Silesia and Greece, found in April and May among fir trees; but Heinemann does not say among what species of fir. Mr. Hodgkinson informs me that all his series of *pinivorana* were taken in Scotland—probably the west,—and this specimen among them.

Heinemann's description is fairly accurate: "Anterior-wings narrower than in *turionana*, of more uniform width, with the costa almost straight, brown-red, with broad violet-grey leaden lines, finely margined with black, and partly interrupted; these leaden lines so very broad that the ground-colour remains only in narrow stripes, interrupted and branched in the marginal area. Costal hooks inconspicuous, small, and faintly double, except the first, which is sharply white, and continued to the upper of the two rather distinct ocelli. Cilia shining grey, with a dark line at the base. Head and long palpi rusty-brown. Hind-wings in both sexes brownish-grey, with pale grey cilia." The last item is not quite accurate, since in German specimens, and also that under consideration, the basal portion of the hind-wings is paler. The most striking feature about this insect is the extraordinary breadth of the leaden lines—usually so narrow,—which here form bands across the anterior-wings alternately with the ground-colour, and even expand here and there into blotches. The black edging is also distinct, especially round a space near the apex. This insect is a very handsome, and most unexpected, addition to our fauna.—CHAS. G. BARRETT, Somerset House, London: *January 14th*, 1890.

A "plague of caterpillars."—When I arrived at Haslemere in the latter part of May last, I was promptly informed that there was "a plague of caterpillars this year." And truly it looked so! From every tree and bush they were swinging in multitudes. One poor woman who came into the town to do her marketing declared that she *must* go home round the woods, several miles further, for she *could not* go back along the lanes "through all those caterpillars." Her feeling on the subject was not unreasonable, they walked *all over* one, and the first sensation of the grip of the anterior-feet of a fine large *Geometra* larva on the back of one's neck is more surprising than agreeable. The tremendous rain of the night of the 26th brought myriads to the ground, from which they lost no time in returning to the trees by way of the trunks, but in the open woods they found the low bushes of hazle, oak, birch, &c., even more convenient, and in a few days these were utterly stripped, the leaves being mere ribs, and presenting a melancholy—not to say "dreadfully untidy"—spectacle. The larvæ were, of course, mainly *Hibernia*, *Cheimatobia*, *Oporabia*, the commoner species of the *Tæniocampidæ*, and other abundant winter and spring species, but such better species as *Tæniocampa miniosa* were very far from scarce, and any one with plenty of spare time and conveniences might have done considerable larva-rearing in that district this year.—Id.: *December 9th*, 1889.

Eupithecia extensaria paired in captivity.—I think that this grand "pug" may now be considered well established on our coast, though still excessively local in its distribution. The larvæ of the autumn of 1888, fed up most satisfactorily, and spun their tough cocoons on the surface of the sand. The hot spring stimulated the appearance of the moths so much, that there seemed good hopes of a second brood (which I need hardly say were, in so cold a summer, disappointed). In two cases they paired, and the females laid their eggs on plants of *Artemisia* tied down with gauze, but the larvæ fed very slowly, and only went into pupa a short time before those taken at large in the autumn. They were not at all particular about being supplied with flowers of the *Artemisia*, which, indeed, were not obtainable until autumn, but fed quite as freely upon the leaves. As before, they have made tough cocoons of silk and sand on the surface.

The moths reared this year were even larger, I think, than those of last year, and well support the character of the species for beauty.

I am often asked whether I believe *extensaria* to be a true *Eupithecia*: its triangular form and oblique stripes giving it so distinguished an appearance. I can only say to those who see it alive with its wings widely spread, and pressed close to the surface upon which it rests, and its abdomen curled up as in *subnotata*, there seems little doubt of its proper location. I think it closely allied to *nanata* and *subnotata*.—Id.

The genus Scoparia.—Mr. E. R. Bankes, in Ent. Mo. Mag., vol. i, p. 7 (new series), announces as the result of his inspection of a series of *S. atomalis*, from Perthshire, that for the future *atomalis* must lose its specific rank. This quite confirms the opinion that I expressed in 1885 on precisely similar grounds, in the Entomologist, vol. xviii, p. 130, where I added, "apparently distinct as these two so-called specimens are, if extreme specimens only are contrasted, yet intermediate *specimens of* every possible degree of gradation are familiar to us all, and who can define the boundary line where *ambigualis* ends and *atomalis* begins?" Any one seeing these intermediate specimens must, I think, be driven to the same conclusion as to their identity, which, I believe, was first put forward by Dr. Buchanan White, in the Scottish Naturalist, vol. iv, p. 244.

In my note in Ent., vol. xviii, p. 130, and in a subsequent one in Ent., vol. xx, p. 17, I pointed out that *conspicualis* had been merged into *ulmella*, and that *gracilalis*, *Zelleri*, *scotica*, *ingratella*, and *portlandica (phæoleucalis* of our lists), must lose their claims to specific rank.

Both these notes are referred to in Ent., 22, p. 17, from which Mr. Bankes quotes, and in which I also mention that the only other remaining questions were the specific identity of *basistrigalis* and *ambigualis*, and of *mercurella* and *cratægella*. As regards these species I hesitate to express a definite opinion as to their identity until I have seen living specimens in their natural haunts, but I have seen specimens of a *Scoparia* from the north and north-west of Ireland, which might with equal confidence be referred to either species (?), *mercurella* or *cratægella*, in which species, as with *atomalis* and *ambigualis*, the extremes seem to be abundantly distinct, while the intermediates I have found it impossible to distinguish.

If Mr. Bankes would kindly mention the peculiar characters of *cratægella* to which he refers, making it abundantly distinct from, and never appearing in, *mercurella*, he would confer a boon on many others, as well as on C. A. BRIGGS, 55, Lincoln's Inn Fields: *January 11th*, 1890.

Scoparia angustea.—After the notes of Messrs. C. G. Barrett and G. T. Porritt, Ent. Mo. Mag., xxii, pp. 42, 209, referred to by Mr. Eustace R. Bankes, *ante*, p. 8, on the above species, Mr. W. G. Sheldon, of Croydon, published at the end of the following year in the Entomologist, vol. xx, pp. 318–320, a full history of the two broods of this species. From Mr. Sheldon's notes it would appear that our southern Lepidopterists fail to get many specimens of the first brood, owing to the early date of their appearance, and that the capture of an odd specimen or two in May or June denotes either a precocious specimen of the late, or a remarkably late specimen of the early, brood. At any rate, Mr. Sheldon's notes are most conclusive that there is a permanent early brood at Croydon in March and April, and a second in August.

I quite agree with Mr. Bankes that *Scoparia atomalis* is a local form of *S. ambigualis*, as I also have a long series of intermediate forms, and I quite agree with him that *S. cratægella* and *S. mercurella* are distinct. I have never taken *S. basistrigalis*, except with *S. ambigualis*, and have specimens of both so-called species mixed in my cabinet from almost every locality I have worked.—J. W. TUTT, Rayleigh Villa, Westcombe Park, S.E.: *January 6th*, 1890.

On Mecyna polygonalis, Treitschke, in New Zealand.—The peculiar changes in the habits and food-plants of this pretty *Pyrale*, and its narrow escape from extinction in New Zealand during the last twenty-five years, are worth placing on record; for some years after the Canterbury settlement was founded, or until the annual burning of the sheep runs commenced, the larvæ fed in immense numbers among the close-growing tussock grass (*Poa australis*), a few years after the firing of the tussock they attacked the cereal crops, and committed great havoc among them, particularly in the later stages of growth. The moth is double-brooded; the first brood appearing in September and October. The larvæ of this brood in most years attaining maturity just as the corn was changing to the ear. They generally attacked the stalk at the first or second joint nearest the head, when the latter would bend down or break off in a manner resembling the work of the *Cecidomyia destructor*; so prodiguous were their numbers that whole fields of grain were sometimes destroyed in a single night. It was the practice of the settlers to observe the direction they were travelling, and by cutting a ditch with perpendicular walls to intercept their progress: the ditch was then quickly filled with dry straw, which was burned, or it was half filled with water, and thus they perished in millions; but the most powerful agent in checking their ravages has been the introduced house sparrow (*Passer domesticus*), which increased at an unprecedented rate: in a few years after its introduction from England, these "Plagues of Caterpillars" became a thing of the past.

In New Zealand, the larvæ of many species of *Lepidoptera* feed on various plants belonging to different Orders, and in each case the colouring of the larva assimilates closely to the plant selected, but the choice of the introduced Cape broom (*Genista capensis*) as the food-plant of the larva of *M. polygonalis* is remarkable for the close assimilation of colours, and the protection it affords, and which has, I think, saved the moth from extermination years ago; in some seasons the moth is more plentiful than in others, but the larva is not yet free from the attacks of the industrious house sparrow, as the latter may frequently be seen searching assiduously for them in the neatly trimmed fences of Cape broom, which is planted to form neat fences around gardens and other enclosures. The larvæ rest during the day at full length upon the pale greenish bark of the plant, while the minute white ridges of the bark agree perfectly with the two white dorsal lines of the larva. I may remark that bred specimens are generally much paler in their tints than those reared in a state of nature.

The happy hunting grounds of the older Entomologists in New Zealand are gradually disappearing, as they have done in England, before the advancement of agriculture; another cause which will affect the economy of many species of *Lepidoptera* in this country is the increased activity in the flax trade. The flax plant (*Phormium tenax*) attains to perfection on moist or rich flats, and in some districts covers hundreds of acres, and during the season of bloom the rich melliferous flowers, borne on tall stems like a gigantic orchid, are a great attraction and support to many species of Nocturnal *Lepidoptera*. In the month of December the flax flats are among the best collecting grounds for Entomologists; but at the present time the knives of the flax cutters are everywhere busy, and no doubt should the flax industry continue to flourish (and, commercially, we hope it may), we will at no distant date speak of many of our finest species, as the older Entomologists of England do of *Polyommatus dispar*, in days gone by.—W. W. SMITH, East Belt, Ashburton, N. Z.: *November*, 1889.

Drepanopteryx phalænoides, L., in Yorkshire.—I am able to place on record another British example of this insect. My friend Mr. J. J. Walker, has given me a specimen received by him from Mrs. Hutchinson. The locality being not quite certain, I made enquiries, and have received a letter from Miss Hutchinson with the following particulars:—"I took it myself; it was captured on August 28th, 1886, in

Deepdale, a lovely gorge, through which runs one of the many tributaries of the Tees on the Yorkshire side. I believe I beat it out of a sallow bush, and it dropped to the ground, and it was only afterwards that I found it was not a *D. lacertula.* I brought it home as a wonderful instance of mimicry."—R. McLachlan, Lewisham, London: *January*, 1890.

Review.

FIFTH REPORT ON THE INJURIOUS AND OTHER INSECTS OF THE STATE OF NEW YORK. By J. A. LINTNER, Ph.D., State Entomologist, Albany, N. Y. 1889.

This Report fully sustains the reputation of Dr. Lintner, as one of the most astute of American State Entomologists. It is full of information useful alike to the Economic Entomologist, the Agriculturist, and the Biologist. It is needless to enter into special details. Some subjects formerly treated upon at length are alluded to, others, and new, are rendered in a minute manner. The illustrations are copious, and even although some of them are familiar as having done duty before, they are none the less useful. The short introductory notes—a summary for the year—go to prove the extreme uncertainty in the attacks of injurious insects—puzzling to the Biologist, comforting to the Agriculturist.

Obituary.

Professor Frey. We regret to announce the death, on the 17th January, of Professor Heinrich Frey, of Zürich, from an attack of apoplexy. We hope to give a more detailed notice of the illustrious Professor in our next number.

Lucien Buquet, Treasurer of the Société Entomologique de France for 45 years (December, 1842, to December, 1887), died in the middle of last December. His decease cannot but occasion deep regret amongst his French colleagues; it will be equally regretted here by many who had the pleasure of his personal acquaintance. He was elected into the French Society in 1833, and, from his appointment as Treasurer to the time of his decease, may be said to have devoted himself nearly entirely (and with great success) to the financial business of the Society. After his retirement in 1887, he was appointed Honorary Treasurer. He published many useful notes on *Coleoptera,* chiefly, if not entirely, in the French "Annales." Being at this moment without further particulars, we can do no more (we could do no less) than put on record this small tribute to the memory of one so long and usefully connected with the oldest existing Entomological Society.

Societies.

At the Annual Meeting of the LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY, held on Monday, January 13th, 1890, at the Free Library, William Brown Street, Liverpool, the President, S. J. CAPPER, F.L.S., in the Chair, Mr. Capper was re-elected President, Mr. F. N. Pierce, Honorary Secretary, and Mr. Willoughby Gardner, Vice-President.

Mr. Capper delivered an address, mentioning the principal most interesting Entomological events of the year.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: *November 14th*, 1889.—T. R. BILLUPS, Esq., F.E.S., President, in the Chair.

Messrs. E. H. R. Hillsworth, T. Hudson, M. Farrant, and J. A. Nevell, were elected Members.

Mr. Jäger exhibited *Lepidoptera* from Suffolk, also *Agrotis ripæ*, Hb., bred from larvæ taken in S. Wales, and read notes on rearing this species. Mr. Tugwell, strongly divergent forms of *Agrotis tritici*, L., and *A. cursoria*, Bork., from English, Irish, and Scotch localities. Mr. Wellman, a specimen of *Nemeophila plantaginis*, L., var. *hospita*, Schiff., taken in Yorkshire, 1860. Mr. Tutt, a drawer of *Gnophos obscuraria*, Hb. Mr. Adkin, the same species from Folkestone; and, on behalf of Mr. Austin, females of *Lycæna Icarus*, Rott., and a variety of *Argynnis Aglaia*, L., Other exhibits were made by Mrs. Hutchinson, and Messrs. Carrington, W. H. McLachlan, and Carpenter.

November 28th, 1889.—The President in the Chair.

Messrs. H. Cameron, L. H. Strong, C. G. Barrett, F.E.S., F. P. Trewicke, A. J. Robertson, A. V. Legros, L. W. Harris, C. H. Lemmon, W. Howgrave, and W. E. Nicholson, were elected Members.

Mr. Jenner Weir exhibited specimens of *Limnas Chrysippus* and *Hypolimnas Misippus*, received from Dr. Percy Rendall, from the Gambia; also *L. Dorippus*, from Eastern Africa; and a female mimic of *H. Misippus*; *L. Chrysippus*, from Natal, with a white spot on the under-wings similar to that of the intermediate female of *H. Misippus*, which appeared to mimic a species of *Limnas*, intermediate in colour between *L. Dorippus* and *L. Chrysippus*, and said it would, therefore, appear that where these two species of *Limnas* were found together and hybridised, the mimicking female of the *Hypolimnas* was found similar in colour to the hybrid. Mr. Elisha showed bred specimens of *Deilephila galii*, Schiff., bred during March at a temperature of from 60° to 70°. Mr. Billups read a paper contributed by the Rev. W. F. Johnson: "A further list of the Irish *Staphylinidæ*, compiled in 1889." The Secretary read two contributions from Mr. T. D. A. Cockerell: "Hybrids and Mongrels," and "Do the colours of Living Insects fade?"

December 12th, 1889.—The President in the Chair.

Mr. A. Beaumont, of Lewisham, was elected a Member.

Mr. R. Adkin exhibited very strongly marked specimens of *Peronea sponsana*, Fb., from the New Forest. Mr. South remarked that nearly all the examples of this species he had taken at Haslemere were of this form, although not so dark. Mr. Barrett said that he had had considerable experience of collecting in this locality, but had never met with this form, which was evidently a local race. Mr. Tugwell, pale grey specimens from the London district, and reddish examples from the New Forest, of *Tæniocampa gracilis*, Fb. Mr. Ince, a large collection of Spiders from Switzerland. Mr. Carpenter, varieties of *Hybernia defoliaria*, Clerck. The Secretary read a note from Mr. T. D. A. Cockerell upon the "Colours red and yellow."

January 9th, 1890.—The President in the Chair.

Messrs. F. H. Atkinson, of Pimlico, C. F. Johnson, of Highbury, and T. Grover, of Westminster, were elected Members.

Mr. Hawes exhibited specimens of *Hesperia lineola*, Ochs., and remarked that he first met with the species flying with *H. Thaumas*, Hufn., and was of opinion that *H. lineola* appeared when *H. Thaumas* began to get worn. Mr. Carrington also showed specimens of *H. lineola*, taken by himself about 20 miles from where Mr. Hawes captured his specimens. Mr. Weir, continental examples of *H. lineola*, also a specimen which he had captured many years ago, but was not certain whether in Kent or Sussex, and an example of *H. Thaumas* from Sussex, which bore a very close resemblance to *H. lineola*. Mr. South, specimens of *Peronea sponsana*, Fb., from Haslemere, also a long series from different localities, varying in tint of ground colour, colour and extent of markings, and made some observations on the named varieties of this species. Mr. R. Adkin, a short series of *Nepticula fulgens*, received from Mr. Vine, of Brighton. Mr. Carrington, an example of a butterfly which had been sent to him for identification, and was stated to have been captured in England, the species being *Syrichthus andromedæ*, Wallengren. Mr. Billups, *Andrena nigro-ænea*, and its internal parasite, *Stylops*, taken at Dulwich, 1889; and, on behalf of Mr. Bennett, of Hastings, a living series of *Andrena Clarkella*, and its rare parasite, *Nomada borealis*, dug on the 6th of the month at Hastings. A communication was read from Mr. Strong relating to an immense swarm of moths at Williamstown about the end of October.—H. W. BARKER, *Hon. Sec.*

BIRMINGHAM ENTOMOLOGICAL SOCIETY: *Dec. 16th*, 1889.—Mr. H. TUNALEY, Vice-President, in the Chair.

Mr. Geo. T. Baker, Edgbaston, was elected a Member.

Mr. R. C. Bradley showed series of several species of *Eristalis*. The evening was devoted to entering up records of local captures of *Lepidoptera* provided for the purpose.

January 6th, 1890.—Mr. H. TUNALEY, Vice-President, in the Chair.

Mr. R. C. Bradley showed series of *Tischeria complanella*, *Dodonea marginea* and *angusticollella*, taken at Trench Woods. Mr. H. Tunaley showed a series of *Tæniocampa incerta*, part of some 200 which had been frozen in the pupal stage. Over 70 °/₀ had emerged as very dark specimens, and only one was really light. Mr. C. J. Wainwright showed a variable series of *Bombyx neustria*, *Cleoceris viminalis*, including dark forms, &c.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

ENTOMOLOGICAL SOCIETY OF LONDON: *January 15th*, 1890.—Fifty-Seventh Annual Meeting.—The Right Hon. Lord WALSINGHAM, M.A., F.R.S., President, in the Chair.

An abstract of the Treasurer's accounts, showing that the finances of the Society were in a thoroughly satisfactory condition, was read by Dr. Sharp, one of the Auditors, and the Report of the Council was read by Mr. H. Goss. It appeared therefrom that the Society had lost during the year 4 Fellows by death, and elected 24 new Fellows; that the volume of Transactions for the year extended to nearly 600 pages, and comprised 23 memoirs, contributed by 20 authors, and illustrated by 17 plates; and that the sale of the Society's Transactions and other publications is on the increase. It was then announced that the following gentlemen had been elected as Officers and Council for 1890:—President, Lord Walsingham, M.A., F.R.S. Treasurer, Mr. Edward Saunders, F.L.S.; Secretaries, Mr. Herbert Goss, F.L.S., and the Rev. Canon Fowler, M.A., F.L.S.; Librarian, Mr. Ferdinand Grut, F.L.S.; and as other Members of the Council, Mr. J. W. Dunning, M.A., F.L.S., Mr. H. J. Elwes, F.L.S., Mr. F. DuCane Godman, M.A., F.R.S., Dr. P. B. Mason, F.L.S., Prof. R. Meldola, F.R.S., Mr. R. South, Mr. Henry T. Stainton, F.R.S., and Mr. Roland Trimen, F.R.S. Lord Walsingham nominated Mr. J. W. Dunning, Mr. Elwes, and Mr. F. DuCane Godman, Vice-Presidents for the Session 1890—1891, and he then delivered an Address.

Mr. Stainton proposed a vote of thanks to the President for his services during the year, and for his Address; this was seconded by Prof. Meldola, and carried. A vote of thanks to the other Officers of the Society was then proposed by Mr. Elwes, seconded by Dr. Sharp, and carried. Lord Walsingham, Mr. Goss, Canon Fowler, and Mr. Grut made some remarks in acknowledgment.—H. Goss, *Hon. Sec.*

SYNOPSIS OF THE BRITISH *ORTHOPTERA*.

BY ELAND SHAW, F.E.S.

(*Continued from Vol.* xxv, *p.* 455).

IV.—LOCUSTIDÆ.

The European *Locustidæ* are divided into ten tribes or sub-families, and these include thirty-nine genera and over two hundred species. We have but ten species in eight genera, yet these represent no less than five out of the ten sub-families. Perhaps in time we may add a few more species to the British list, but a great number of the European species are found only in the extreme south. In the genus *Ephippigera*, for example, out of 49 species (11 of them from North Africa) only one occurs in Central Europe, and 21 are confined to Spain. De Selys-Longchamps, in his "Catalogue Raisonné des Orth. et des Neur. de Belgique" (Ann. Soc. Ent. de Belg., xxxii, 1888) gives 13 species of *Locustidæ* as occurring in Belgium, and of these we have 9; our one species which he does not mention as Belgian being *Phaneroptera falcata*, Scop., and our claim to this as British is questionable. The four Belgian species which we do not possess are *Barbitistes serricauda*, Fab., *Gampsocleis glabra*, Herbst, *Platycleis bicolor*, Philippi, and *Ephippigera vitium*, Serv.

The *Locustidæ*, together with the *Acridiidæ* and *Gryllidæ*, form the saltatorial division of *Orthoptera*. They are distinguished from the *Acridiidæ* by their long antennæ, by the position of the stridulating organ in the anal areas of the elytra of ♂, and by their long exserted ovipositor; and while possessing these characters in common with the *Gryllidæ* (except in *Gryllotalpa*, where the ovipositor is absent), they may be readily separated from them by their 4-jointed tarsi, which in the *Gryllidæ* are 2- or 3-jointed.

The following details of structure should be especially noticed:—

The head has the vertex more or less produced between the antennæ, and the vertex may be broad and rounded (*Decticus*, &c.), or ending in a conical prominence (*Xiphidium*), or of an intermediate form; the edge of the vertex is separated from the frons by a cross furrow; the antennæ have a very robust proximal joint, and this is inserted in a cup, the form of which varies; the eyes are more or less prominent; the lateral ocelli which the *Acridiidæ* possess are wanting, and the central one is an indistinct spot, situated immediately below the cross furrow, which separates the frons from the vertex.

In the thorax the pronotum shows some important characters, but is not so useful in classification as it is in the *Acridiidæ*; the longitudinal ridges are generally wanting, but may be sometimes seen (*Platycleis*), and the median one is obsolete or not strongly marked. The structure of the side flaps should be noticed, especially that of the inferior border, which sometimes runs backwards in a single curve to meet the posterior border of the dorsal part (disc) of the pronotum, and sometimes is more or less hollowed out over the shoulders, forming the "sinus humeralis." The prosternum may be plain (*Meconema*), or furnished with two spines (*Xiphidium*, &c.). The elytra have a much simpler venation than in the *Acridiidæ*; taking for example the elytron of *Lo. viridissima*, we see a mediastinal vein, an anterior and a posterior radial vein, and an ulnar vein, and, springing from the last, a dividing vein; below this, in ♀, are two branches of the vena plicata, but in ♂, part of the anal area with its veins is modified into a stridulating organ. The left elytron when closed is carried above the right one, and in the upper or left part of the apparatus the veins are thickened, especially on the under-side, and close to the base of the elytron are two or three transverse strong veins, the outer of which forms the internal border of an irregularly circular cell, the membranous part of the elytron being unaltered, while in the right elytron this circular cell is filled by a clear, transparent, glistening, vibratile membrane. By the rubbing together of these two the sound is produced, and it is usually of a much shriller character than in the *Acridiidæ*.

The legs give most important characters. In the anterior tibiæ, just beyond the base, is situated what is said to be the external auditory organ, and of this there are three forms:—1, open or oval (tympanum apertum), as in *Meconema*; 2, conchate (tympanum conchatum); 3, cleft-shaped (tympanum clausum), as in the majority of genera. The disposition of the spines of the tibiæ is much used for classification. The anterior tibiæ have a double row of spines below and a single row above, and the presence or absence of apical spines in the upper row should be noticed. The middle tibiæ resemble the anterior ones, but lack the tympanums, which these possess. The posterior tibiæ have double rows above and below, and the apical spines are of systematic importance. The majority of the *Locustidæ* have four spines below, a pair on either side, which are used to fix a point from which the insects spring, but in *Phaneroptera* there are only two spines, one on each side. It should also be noticed whether the sides of the tibiæ (ant.) and the sides of the joints of the tarsi are plain or sulcate.

The structure of the genital apparatus should be noticed, especially that of the supra-anal plate, sub-genital lamina, cerci, and ovipositor; the last differs from that of the *Acridiidæ* in being long and exserted, and its curve is more or less strongly marked in different genera, while sometimes (*Leptophyes*) the curve of the upper is not the same as that of the under border. The eggs are laid singly.

The larvæ change their skin about six times, and, as in all the saltatorial *Orthoptera*, have the organs of flight inverted, *i. e.*, with their inferior borders towards the mid-dorsal line.

Table of Genera.

1 (4) First and second joints of the tarsi not sulcate at the side.
2 (3) Smaller size; elytra and wings not fully developed; anterior coxæ unarmed ....i. *Leptophyes*.
3 (2) Much larger size; elytra and wings fully developed; anterior coxæ armed with spines ....ii. *Phaneroptera*.
4 (1) First and second joints of the tarsi sulcate at the side.
5 (6) Foramina of the anterior tibiæ open; elytra in ♂ with no tympanum.. iii. *Meconema*.
6 (5) Foramina of the anterior tibiæ cleft-shaped; elytra in ♂ with a tympanum in the anal area (posterior tibiæ above in both margins with an apical spine).
7 (8) Anterior tibiæ smooth, not sulcate at the side, with no apical spines above iv. *Xiphidium*.
8 (7) Anterior tibiæ sulcate at the side, with an apical spine in the external margin above.
9 (10) Prosternum armed with two spines ....v. *Locusta*.
10 (9) Prosternum unarmed.
11 (14) Anterior tibiæ with three spines above.
12 (13) Elytra and wings squamiform; pronotum convex above .. vi. *Thamnotrizon*.
13 (12) Elytra and wings fully developed (sometimes abbreviated); pronotum nearly flat above ....vii. *Platycleis*.
14 (11) Anterior tibiæ with four spines above ....viii. *Decticus*.

i.—LEPTOPHYES, Fieber.

This genus, with the following one (*Phaneroptera*), belongs to the sub-family *Phaneropteridæ*, and these two are distinguished from the other British genera by their smooth-sided first and second tarsal joints. The peculiar characteristic of *Phaneroptera* is the form of the ovipositor, which is short, much compressed, and pointed, and has some small crenulations near the apex. The anterior edge of the vertex is narrow, the anterior coxæ are not armed with spines, the pronotum is smooth, and the organs of flight are ill developed.

1.—LEPTOPHYES PUNCTATISSIMA, Bosc.

Locusta punctatissima, Bosc d'Antic, Actes de la Soc. d'Hist. Nat. de Paris, tab. i, p. 44, pl. x, figs. 5, 6.
Odontura punctatissima, Fischer, Orth. Eur., p. 232, tab. xii, fig. 15.
Leptophyes punctatissima, Brunner, Prod. der Eur. Orth., p. 285.
Locusta autumnalis, Hagenbach, Symb., p. 25, fig. 14.
Barbitistes autumnalis, Charpentier, Horæ Ent., p. 102.
Ephippigera virescens, Steph., Mandib., vi, p. 11.

General colour green, with numerous black dots and some dark markings. Head with the anterior edge of the vertex separated from the frons by a furrow; antennæ very long, with a few dark annular markings. Pronotum short, elevated posteriorly in ♂ with two lateral pale brown streaks on the disc, bordered externally by sulphureous streaks, and a transverse one at the anterior margin. Elytra in ♂ free, as long as the pronotum, with the vena plicata strongly marked; elytra in ♀ much shorter than the pronotum. Wings abortive. Cerci in ♂ smooth, strongly incurved in their lower third, pointed at the apex. Subgenital lamina in ♂ long, sharply bent upwards from the base, truncate at the apex, with a median longitudinal ridge below. Ovipositor short, broad, dilated at the base, then much compressed, with the superior margin slightly, and the inferior one much, incurved, having small crenulations for the outer third of its length, more strongly marked below than above.

Length of the body, ♂, 13 mm., ♀, 16 mm.
„ „ ovipositor, ♀, 7 mm.

Distributed over a large area in Europe. I think *punctatissima* will be found fairly common in England on trees and bushes, late in the autumn. I once took several specimens off bramble on Bostal Heath, near Plumstead. Mr. Porritt has taken it "not uncommonly" at Penmaenmawr, and the other localities from which I have it recorded are Hastings, Herne Bay, Bromley, Polegate, Wimbledon, Dartford, and Coombemartin.

ii.—PHANEROPTERA, Serville.

Together with the allied genus (*Tylopsis*, Fieb.), *Phaneroptera* forms that group of the sub-family of *Phaneropteridæ*, which has the anterior coxæ armed with spines. The species are much larger than in the preceding genus, and the elytra and wings are fully developed.

1.—PHANEROPTERA FALCATA, Scop.

Gryllus falcatus, Scopoli, Entom. Carn., p. 108, fig. 322.

Phaneroptera falcata, Fischer, Orth. Eur., p. 238, tab. xii, figs. 21—22 (except figs. 21*b*′, *c*′, 22*a*, 22*b*′); Brunner, Prod. der Eur. Orth., p. 291.

Pale green. Head and pronotum dotted with reddish-brown. Pronotum with the lateral lobes longer than they are deep, with the inferior margin obtusely angled anteriorly, rounded posteriorly, and running up to meet the margin of the dorsal part (disc) of the pronotum at an acute angle. Elytra narrow, rounded at the apex, not nearly so long as the wings, with the radial veins distinct from the base, the posterior radial vein giving off two branches. Wings about one-third as long again as the elytra, rounded at the apex. Posterior femora slender, about the same length as the elytra, with some reddish-brown dots above. Anterior tibiæ with the foramina open, beyond these suddenly narrowing, with only an external apical spine above and only a few spines below. Cerci in ♂ greatly incurved, about the middle compressed, dilated. Subgenital lamina (♂) dilated at the apex, with pointed prominent lobes, no styles. Ovipositor sharply incurved, nearly straight above beyond the basal curve, regularly incurved below, with very minute crenulations.

Length of the body, 14—18 mm. Length of the elytra, 20 mm.
„ „ wings, 28 mm. „ „ ovipositor, 5 mm.

This insect is included here in the hope that it may really turn out to be a British species, but at present our only claim to it as such rests on the occurrence of a single example taken by Dr. Mason in September, 1881, at Porthgwarra, near Land's End (Ent. Mo. Mag., xx, p. 186), and this may, as Mr. McLachlan suggested, have found its way ashore from some passing vessel. Brunner gives the limits of its northern distribution in Europe as 48°, and de Selys does not mention it from Belgium.

iii.—MECONEMA, Serv.

The sub-family of *Meconemidæ*, to which this genus belongs, is peculiar in having no stridulating organ in the male elytron, and the anterior tibiæ bear no apical spines. There are two European genera and three species. In *Meconema* the species have a small pronotum, fully developed free elytra and wings, no spines on the anterior coxæ, and a smooth ovipositor.

1.—MECONEMA VARIUM, Fab.

Locusta varia, Fabr., Ent. Syst., ii, p. 42.
Gryllus varius, Donovan, Nat. Hist. Brit. Ins., iii, tab. 79, fig. 1.
Meconema varia, Steph., Mandib., vi, p. 15.
Mec. varium, Fisch., Orth. Eur., p. 240, tab. xii, figs. 19, 19*a*, 20; Brunner, Prod. der Eur. Orth., p. 296, fig. 68.

Pale green. Head with the edge of the vertex produced into a tubercle; antennæ long, with fuscous rings at intervals, and the internal margins of the cups in which the antennæ are seated considerably elevated. Eyes very prominent. Pronotum short, without any humeral sinus, with a median, longitudinal, yellowish streak, and a slight median ridge behind the cross furrow, on each side of which is a small fuscous streak (sometimes absent). Elytra and wings perfectly developed in both sexes; broad, with two distinct radial veins, no stridulating organ in ♂. Wings cydoid, hyaline, with green veins. Femora slender; anterior tibiæ with an open foramen on either side; without any spines above, and with four on each side below. Tarsi with the first two joints sulcate at the side. Cerci in ♂ long, smooth, considerably incurved, somewhat clubbed towards the apex. Ovipositor as long as the abdomen, incurved, smooth, tapering gradually. Subgenital lamina in ♀ triangularly produced.

Length of the body, 12—15 mm.
„ „ ovipositor, 9 mm.

From August to November on trees, chiefly oak. May be best procured by beating. Kensington Gardens, Bromley, West Wickham, Boxhill, Dartford, Easton-Maudit (Northants), &c. The late Mr. Kemp-Welch took it plentifully near Lyndhurst, and Mr. Porritt tells me he has specimens from Edlington Wood, near Doncaster, and from *near Bedford.*

iv.—XIPHIDIUM, Serv.

This genus belongs to the sub-family *Conocephalidæ*. In common with all the other genera, except *Leptophyes* and *Phaneroptera*, the 1st and 2nd joints of the tarsi are sulcate at the side. It is separated from *Meconema* by having the foramina on the anterior tibiæ cleft-shaped instead of open, and this character it shares with all the succeeding genera; whilst from these latter it is distinguished by the smooth anterior tibiæ (*i. e.*, not sulcate at the side), which have no apical spines on their upper aspect.

1.—Xiphidium dorsale, Latr.

Locusta dorsalis, Latreille, Hist. Nat. Crust. et Ins., xii, p. 133.

Xiphidion dorsale, Steph., Mandib., vi, p. 14.

Xiphidium dorsale, Fischer, Orth. Eur., p. 248, tab. xiv, figs. 4*a*—4*d*; Brunner, Prod. der Eur. Orth., p. 302.

Of a general pale emerald-green colour, with the dorsum reddish-fuscous. Head with the vertex compressed anteriorly, produced between the antennæ, divided from the edge of the frons by a furrow. Antennæ very long; frons sloping well backwards. Pronotum with the side lobes not forming any angle with the disc, but roundly inserted, side lobes somewhat triangular with an oval inflated space within the posterior border. Prosternum with two spines. Elytra subhyaline, with reddish-fuscous veins, narrow, rounded at the apex, shorter than the abdomen. Wings abbreviated. Anterior coxæ with a long curved spine. Anterior femora short; posterior femora thickened towards the base, very slender in their posterior half, without spines below. Anterior tibiæ with the foramina almost concealed, with no spines above, and six in either margin below; posterior tibiæ long, slender, with an apical spine on either side above, and with four apical spines below. Anal segment (♂) broad, horizontally produced, sulcate, bidentate in the posterior margin, concealing the triangular supra-anal plate. Cerci in ♂ conical, pointed, rough, with an internal tooth, decurved at the apex. Ovipositor not longer than the abdomen, gently incurved, faintly crenulate towards the apex.

Length of the body, 12—15 mm.
" " ovipositor, 9 mm.

This species occurs all over Europe, from North Germany to Sicily. It inhabits moist localities, and should be sought along the banks of rivers and in marshy places. In August, 1886, Mr. E. Saunders took it not far from Herne Bay, and Mr. Porritt has taken it at Deal. Sweeping will probably be the best method to adopt.

Another species of this genus *X. fuscum*, Fabr., has found its way into the older publications on British *Orthoptera*, probably through an error of Curtis', who seems, as Stephens (*op. cit.*, p. 14) suggests, to have mistaken *X. dorsale*, Latr., for it.

v.—LOCUSTA, de Geer.

In the sub-family *Locustidæ*, to which this genus belongs, the species have the foramina of the anterior tibiæ cleft-shaped, as in the preceding sub-family *Conocephalidæ*, and in the succeeding one *Decticidæ*; and from the former of these it is distinguished by the anterior tibiæ having a well-marked longitudinal lateral furrow, and an apical spine above in the external margin; while from the latter the spined prosternum will serve to separate it. The presence of two spines on the prosternum does not hold good as a character to distinguish the *Locustidæ* from the *Decticidæ* when all the European genera are regarded, about half the genera of the latter sub-family having the same structure, but the single British genus *Decticus* belongs to that group of the sub-family in which the species have an unarmed prosternum, and as the character is easy to recognise, it has been used for the British forms. In all the *Decticidæ* the first joint of the posterior tibiæ has two long free processes underneath (the "plantules"), which are wanting in the *Locustidæ*.

1.—LOCUSTA VIRIDISSIMA, Linné.

Gryllus (*Tettigonia*) *viridissimus*, Linné, Syst. Nat. (ed. x), i, p. 430, (ed. xii), i, p. 698.

Phasgonura viridissima, Stephens, Mandib., vi, p. 16.

Locusta viridissima, Fabr., Ent. Syst., ii, p. 41; Fischer, Orth. Europ., p. 251, tab. xiv, figs. 5, *5a—f*; Brunner, Prod. der Eur. Orth., p. 307.

Of a general bright green colour, often with fuscous or reddish-brown markings above. Head with the edge of the vertex obtuse, not broader than the first joint of the antennæ, with a shallow longitudinal sulcus above, and separated from the frons by a cross furrow. Pronotum smooth, usually with a fuscous longitudinal streak occupying the middle of the disc, rounded posteriorly; generally with a faint obsolete median line not raised and best marked behind; side flaps inserted roundly (no lateral carinæ), about as deep as they are broad at the base, inferior margin with the posterior angle bluntly angled. Elytra perfectly developed, green, anal area somewhat fuscous, mediastinal vein well makred, radial veins separate from the base, veins brownish towards the base. Wings hyaline. Prosternum with two long spines, meso- and metasternal lobes produced, acuminate. Anterior and middle femora below on the anterior border with short black spines, posterior femora with black spines below on both borders; anterior tibiæ on both sides with a closed tympanum, below which is a longitudinal furrow, above with three spines in the external margin; posterior tibiæ above with an apical spine on either side, below with four apical spines. Anal segment in ♂ deeply sulcate, produced posteriorly into two lobes, hiding the supra-anal plate. Cerci (♂) long, reaching beyond the styles, with an *internal basal* tooth; subgenital lamina (♂) with long styles. Ovipositor sword-

shaped, acuminate at the apex, subdeflexed, shorter than the elytra. Subgenital lamina in ♀ bilobed.
Length of the body, 28—35 mm.
„ „ ovipositor, 27—30 mm.

Its large size at once distinguishes this species from the other British *Locustidæ*, the only one approaching it is the rare *D. verrucivorus*, whose spotted elytra are at once noticeable. I have taken it or know of its occurrence in many places along the south coast, from Ramsgate to Land's End, and in the latter district saw it in large numbers in September, 1889, and Mr. R. J. Pocock has given me specimens from Rhosili in Glamorganshire. Its stridulation is peculiarly harsh and strident, making it easy to stalk it down, when its capture may be best effected by seizing the hind-legs with the hand, care being taken to secure them both, for if only one be held, the insect is sure to break away, leaving its leg behind. *Lo. viridissima* occurs all over Europe, and also in Northern Africa, Asia Minor, and in the Amur district.

vi.—THAMNOTRIZON, Fischer.

Thamnotrizon, together with *Platycleis* and *Decticus*, belong to the sub-family *Decticidæ*, in which the prosternum is unarmed (in British genera). The proximal joint of the posterior tarsi bears two strong free processes (the "plantules"), which subserve the act of springing. The anterior tibiæ have on the upper-side three or four spines; and the posterior tibiæ have two apical spines above and four below (in British genera).

In *Thamnotrizon* and *Platycleis* the anterior tibiæ have three spines above, while in *Decticus* there are four; and *Thamnotrizon* differs from *Platycleis* in having the elytra squamæform.

1.—THAMNOTRIZON CINEREUS, Linné.

Locusta cinerea, Linné, Syst. Nat., ed. xiii, p. 2071.

Thamnotrizon cinereus, Fischer, Orth. Eur., p. 265, tab. xiii, figs. 16, 16*a*—*b*, 17, 17*; Brunner, Prod. der Eur. Orth., p. 343.

Lo. aptera, Charpentier, Horæ Ent., p. 117.

Micropteryx aptera, Stephens, Mandib., vi, p. 12.

Acrida clypeata, Curt., Brit. Ent., ii, pl. 82. (*Locusta*), Panzer, fasc. 33, pl. 4.

Greyish-brown, with black markings. Head with the vertex broad, rounded, separated from the frons by a transverse sulcus, where it has narrowed to less than the breadth of the first joint of the antennæ, ferruginous with faint fuscous markings, and two dark fuscous spots between the antennæ. Antennæ not twice as long as the body. Pronotum narrower anteriorly than posteriorly, with the posterior margin truncate, in ♂ flat, in ♀ subconvex, with the remains of a median carina indicated posteriorly; side lobes roundly inserted, with a dark fuscous patch above, sometimes only showing as a streak posteriorly, paler below, extreme margin paler still. Prosternum unarmed. Elytra greyish-brown, squamæform in ♂, with a dark fuscous lateral streak; lateral in ♀, barely produced beyond the pronotum. All the femora without spines below, posterior ones thickened at the base, with a fuscous streak on either side, pale below. Anterior tibiæ with three spines above; posterior tibiæ with four apical spines below; first joint of the posterior tarsi with long, free plantules. Abdomen above brown, sometimes with a fuscous, broad, lateral streak, and with a small black central spot in the posterior margin of each segment, above which is sometimes seen a V-shaped fuscous mark; abdomen yellowish below. Anal segment in ♂ sulcate, margin slightly thickened, cerci in ♂ conical, straight, with an internal tooth near the base; subgenital lamina in ♂ yellow, with a dark fuscous lateral streak, posterior margin rounded; subgenital lamina in ♀ short, transverse, sulcate. Ovipositor well incurved, margin smooth.

Length of the body, 13—18 mm.
„ „ ovipositor, 9—10 mm.

On brambles and bushes in the autumn. From many localities along the southern coast, also from near Bedford (Mr. Porritt), Lincolnshire (Mr. Wallis Kew), Wotton, Gloucestershire (Mr. Perkins), and I have found it in some numbers at Wormwood Scrubs, near London, at Bostal Heath, Plumstead, and at Falmouth.

(*To be continued*).

COLEOPTERA IN NORFOLK.

BY JAMES EDWARDS, F.E.S.

Now that we have in "The Coleoptera of the British Islands," by the Rev. Canon Fowler (L. Reeve & Co., London, 1887, *et seq.*), a recent work dealing with the distribution of our British beetles as a whole, the following notes may possibly be found of some interest as a modest contribution to the subject.

The following species have occurred to me in the neighbourhood of Brandon:—

Hydroporus marginatus: three or four specimens; this species is very likely to be passed over in the net in mistake for *H. planus*, but its larger size and reddish head render it easily distinguishable. *H. oblongus*: one example only; this species is recorded from Horning, but I have not yet met with it there. *Agabus femoralis*: very common; this species does not, so far as I know, occur in East Norfolk. *A. affinis*: the occurrence of this species in the district under consideration is rather remarkable, since it seems to have been only recorded from near Dumfries; it did not occur in company with *femoralis*, but in a swampy place, where the herbage was only covered by a few inches of water; *A. unguicularis*, its nearest congener, I have not yet taken, but I was fortunate enough to have by me for comparison a specimen of the latter, obtained of Mr. Janson several years ago as *affinis*, under which name it formerly stood in our collections. *Ilybius subæneus*: I took one specimen of a female *Ilybius* which possesses the characters laid down for this species by Mr. Rye, quoting Redtenbacher, in Ent. Ann., 1867, p. 57; much working failed to produce a second example. *Hydrochus carinatus*: this species occurred again this year, but much more sparingly than in 1888. *Philhydrus minutus*: I have not found this species in any other locality. *Bagous sp.?*: I have on two or three occasions taken single specimens of a *Bagous*, which does not agree well with any description to which I have access, but seems to come nearest to *B. limosus*.

Although the Horning and Ranworth marshes are not the entomological paradises that certain writers on the "Broad" district would have us believe, still they are charming places in the summer time, and a diligent collector may undoubtedly meet with some beetles which are usually accounted rare; personally, I rather prefer the former, on account of some minor details of accessibility, but the Coleopterous Fauna of both localities is, in the main, very much the same.

The following is a list of some of the best things that have occurred to me at Horning:—

Gyrinus Suffriani: perhaps the best character for separating this species from its congeners lies in the punctuation of the striæ near the suture of the elytra, which is distinctly stronger towards the base; it may be readily distinguished in the field by its small size and almost invariably solitary habits; it never swarms like *G. marinus*, which occurs in profusion at the same time and place, but is so closely mimicked by males of the latter when swimming more than ordinarily submerged, a habit which they frequently affect, that I have more than once been completely deceived, until I had the insect in my hand. *Hydroporus ferrugineus*: I took one example of this species amongst *Lemna* in a ditch on June 14th, 1888. *Hydrochus brevis*: occurs sparingly. *Anthocomus terminatus*: very rare; I have two examples taken at different times by sweeping; the species has not apparently been recorded for many years.

Mousehold Heath, near this city, has long had a great reputation as a good collecting ground, and in the year 1883 I had the opportunity (not likely to recur) of working at it day after day, a circumstance which accounts in a great measure for the best things enumerated in the following list:—

Pterostichus dimidiatus: scarce, not seen of late years. *Ocypus cyaneus*: about a dozen specimens occurred in 1883, but I know of no captures here more recent than this. *Onthophilus sulcatus*: very rare: I have three specimens, two taken in 1883, and one from an old Norfolk collection. *Cleonus nebulosus*: has occurred but rarely, and that not of late years; this species and the three preceding are mentioned in a "Catalogue of Insects found in Norfolk," by the Rev. John Burrell, published in the Trans. Ent. Soc. Lond., vol. i (old series), about the year 1807. *Cænopsis fissirostris*: this species has occurred, not very uncommonly, generally under *Spergularia rubra*. *C. Waltoni*: much scarcer than its congener.

From observations on the genus *Laccobius* made in the field, I had, at first, some reason for thinking that *L. sinuatus* and *bipunctatus* were but the two sexes of the same species, and that *alutaceus* and *minutus* stood in the same relation to each other; as my stock of material increased, however, I found that I possessed both sexes of all four. The commonest species with us are *alutaceus* and *bipunctatus*, both of which are about equally common, *sinuatus* is less common, and *minutus* decidedly scarce.

Hydrobius picicrus seems to be a good species; it used to be very common in the marshes of the Yare, below Norwich, where it occurred quite unmixed with *H. fuscipes* proper, indeed, I have only become acquainted with the latter within the last year or two, and have never taken the two species in company.

Limnius troglodytes: I have taken a few specimens of a *Limnius* here, which I believe to be this species; the engraved lines on the thorax are straight, and the elytral striæ are finely and, as a rule, closely punctured. Three of my specimens came from the river Wensum, a few miles above Norwich, and I found another amongst about a score of *L. tuberculatus* from the Dilham Canal, at Horning. The smallest of my specimens is ·06 in length, and the largest nearly equal in size to an average specimen of *tuberculatus*. Unfortunately, in "The Coleoptera of the British Islands" (vol. iii, p. 378) the characters laid down in the table of species are at variance with those in the detailed descriptions; as *L. rivularis* is said in the table to have the thorax more shiny than *tuberculatus*, but in the description of the former we are told that the disc of the thorax is more closely punctured and duller than in the latter. I have no doubt, however, that my determination of the species is correct.

In this neighbourhood one has exceptional facilities for the study of *Gyrinus marinus* and *opacus*, and there really seems to be no adequate reason for treating the latter as merely a variety of the former; certainly, with us *opacus* is very constant in its characters, and in the river Wensum, in the immediate neighbourhood of Norwich, it occurs in the utmost profusion, quite unmixed with any other species. The two species last named are the commonest of the genus with us, both being much commoner than *natator*. *G. elongatus* has doubtless done duty for *G. bicolor* in more important collections than my own, but when we have before us a specimen of the latter, really possessing the characters assigned to the species, it is impossible not to be struck with its distinctness. I have examined one such example taken by Mr. Thouless, at Hickling Broad, in company with *G. minutus*; it is considerably larger than than the largest *elongatus*, with the external angle of the elytra completely rounded, and the mesosternum black; in my long series of *elongatus* the narrower and more convex examples are rather below the average size for the species, and all have the external angle of the elytra well marked, and the mesosternum red.

131, Rupert Street, Norwich:
January 16*th*, 1890.

[Mr. Edwards' criticism as to the discrepancy between my table and description of *Limnius* is a perfectly just one; I have, as a rule, been very careful to avoid such discrepancies, as I have myself found them a considerable trouble, even in the works of most careful authors like Thomson, Weise, &c., &c.; this is the first to which I have had my attention called; in the case alluded to, I find that specimens of the two species differ *inter se*, and that the character is itself variable; this, I take it, is the usual explanation of such discrepancies, as the tables and descriptions *are not always* drawn up at the same time.—W. W. F.]

DESCRIPTIONS OF SOME NEW SPECIES OF SOUTH AMERICAN *HALTICIDÆ*, OF THE GROUP *ŒDIPODES*.

BY MARTIN JACOBY, F.E.S.

(*Concluded from p.* 48).

HAPALOTRIUS FULVICOLLIS, *n. sp.*

Head black, the vertex rugose; clypeus fulvous; antennæ, the apex of the tibiæ and the tarsi and abdomen, black; thorax fulvous, clothed with golden pubescence; elytra dark fuscous, closely punctate-striate, the interstices costate; femora fulvous, breast piceous. Length, 2½ lines.

Head rugosely and deeply punctured at the vertex, black, the clypeus reddish-fulvous; palpi rather strongly incrassate; antennæ slender, black (the terminal three joints wanting), the third and following joints very elongate; thorax transverse, narrowed at the base, the sides rounded before the middle, the surface very finely and closely punctured, clothed with long golden pubescence; scutellum fuscous; elytra depressed, nearly black, impressed with deep transversely shaped punctures, the interstices strongly longitudinally costate; the entire surface opaque, finely pubescent, the extreme sides clothed with more whitish hairs; below piceous; the abdomen black; the femora fulvous; tibiæ with two spurs; claws appendiculate.

Hab.: Amazons.

RHINOTMETUS NIGROLIMBATUS, *n. sp.*

Broadly ovate, sub-depressed; glabrous; head and thorax dark fulvous; antennæ, the breast, the femora above and the tibiæ and tarsi, black; elytra flavous, narrowly margined with black, strongly punctate-striate, the interstices convex; abdomen flavous. Length, 4 lines.

Head elongate, dark fulvous, the vertex finely rugose, the lower portion shining; the penultimate joint of the palpi not thicker than the preceding one; antennæ black, the third to the sixth joints elongate, shining (the rest wanting), thorax but slightly broader than long, the sides nearly straight, slightly narrowed before the middle, the surface shining, glabrous, with two rather deep impressions (nearly contiguous) near the base, the disc with a few scattered punctures, the latter more closely placed at the sides and near the base, dark fulvous; scutellum piceous; elytra very broad without any depressions, impubescent, flavous, all the margins narrowly black, the punctuation close, and consisting of transversely shaped punctures, the interstices convex and also very minutely punctate; the shoulders with a short black spot, the epipleuræ entirely black; the breast piceous, finely pubescent; the abdomen and the posterior femora flavous, the apex of the latter black, as well as the upper margins of the anterior femora and the tibiæ and tarsi; the apex of the posterior tibiæ armed with a double spur; claws bifid.

Hab.: Brazil (my collection).

Of this proportionately large sized species a single specimen was given to me by a friend as having been obtained at the Brazils, without nearer locality. On account of the not incrassate palpi, the bifid claws, and other particulars, I have placed the species in *Rhinotmetus*. The present group contains so many members which show so many modifications, that it is often almost impossible to place them with certainty in Clark's numerous genera, many of which will in future have to be amalgamated.

THRASYGŒUS MACULICOLLIS, *n. sp.*

Broadly ovate, depressed, finely pubescent, flavous; the vertex, antennæ, the breast and the tibiæ and tarsi, black; thorax yellow with two large black spots; elytra brownish, opaque, finely punctate-striate and pubescent, the sides fuscous.

var. a. Elytra black; *var. b.* The entire insect black. Length, 3½ lines.

Head granulate punctate, flavous, the vertex fuscous; labrum black; palpi flavous, scarcely thickened; antennæ closely approached, two-thirds the length of the body, black, the third joint the longest, the following joints slightly shorter; thorax about one-half broader than long, the sides nearly straight, slightly rounded before the middle, the anterior angles subtuberculiform, the surface finely granulate, flavous, clothed with very short yellowish pubescence, the middle of the disc furnished with a raised, smooth, longitudinal, narrow space, the sides with a large blackish spot and extending to either margin; scutellum fuscous; elytra finely and closely punctate-striate, the interspaces slightly longitudinally convex, opaque, finely transversely rugose, and clothed with extremely short greyish pubescence; abdomen and femora flavous, the posterior ones extending to the end of the abdomen in the male, their apex black; tibiæ with a distinct spine; claws bifid.

Hab.: Brazils, St. Catharina (Theresopolis, Rio Capivari).

Thrasygœus is one of the worst defined genera amongst the forty-two established by Clark. It is described by this author as having unarmed posterior tibiæ, while the figure he gives seems to show a distinct spine; the latter is the case to my knowledge in all *Halticidæ*; moreover, I have convinced myself by examining Clark's type in the British Museum (as already pointed out by myself in the Biologia Centr. Americana), that a distinct spine is present. Again, von Harold has described a species under the generic name of *Thrasygœus*, on account of Clark's supposed definition (according to Harold), that the tibiæ were armed with a *double* spur; this author has therefore misunderstood Clark's misleading description. *Th. maculicollis*, of which I possess a good series, kindly given to me by the collector, Herr Fruhstorfer, may be known by the nearly filiform palpi, the bifid claws, and the other particulars pointed out; the species seems to be a very variable one, and is nearly similar in colour to *T. scabrosus*, Cl., but is much larger and broader, and distinguished by the two large black thoracic spots in the typical form; the variety *b* is of entirely black colour, but differs in no other way.

METRIOTES METALLICUS, *n. sp.*

Black; above and the legs greenish-æneous; head and thorax strongly punctured; elytra with the basal portion raised, finely punctate-striate; posterior tibiæ dentate at their outer margin. Length, 2 lines.

Head remotely but strongly punctured, metallic greenish-æneous, the labrum black; antennæ black, half the length of the body, the third, fourth and fifth joints elongate, of nearly equal length, the following joints shorter and thicker; thorax *one-half broader* than long, the sides perfectly straight, the angles acute, the disc with two anterior and one central tubercle, the base depressed at the sides, the raised portion impunctate, the other deeply and strongly punctured; scutellum piceous, rugose; elytra rather depressed, excepting the basal portion, which is strongly swollen and bounded below and at the sides by a distinct depression, the punctures within these depressions strongly, the rest of the surface finely and remotely punctate-striate; the interstices flat, shining, and sparingly clothed with single erect black hairs; legs bluish-green; the posterior tibiæ armed at their outer margins with a row of four or five short teeth, their apex with a double spur; tarsi piceous; claws appendiculate.

Hab.: Ecuador. A single specimen in my collection.

M. metallicus, which has all the characters peculiar to *Metriotes*, may be known by its metallic brownish-green and glabrous upper surface, the strongly raised basal portion of the elytra, and by the sculpture of the thorax, which has the frontal elevations rounded and broad, while the central one is of more elongate and narrower shape, and bounded at the sides by a deep oblique depression.

London: *November*, 1889.

DESCRIPTIONS OF FOUR NEW SPECIES OF *CASTNIA* FROM SOUTH AMERICA, IN THE COLLECTION OF HERBERT DRUCE.

BY HERBERT DRUCE, F.L.S., F.R.G.S., &c.

CASTNIA AMALTHÆA, *sp. n.*

Primaries dark brown, partly crossed from the costal margin by two white bands, the first near the base, the second beyond the middle. Secondaries reddish-orange, with a round spot at the end of the cell, and a mark between it and the inner margin, both black; a submarginal row of black spots with white ocelli extend from the apex to the anal angle; the marginal line black; the fringe of both wings brown. Under-side of both wings uniformly orange-red; the outer band of the primaries shows on the under-side, where it is broadly edged with black; the spots on the secondaries are the same as above, but much smaller; the head, thorax, and abdomen above pale brown, on the under-side orange-red; the legs reddish-brown. Exp., 3 in.

Hab.: Brazil.

This species is allied to *Castnia Therapon*, Kollar.

CASTNIA PELOPIA, *sp. n.*

Primaries black, with all the veins deep black, streaked with greenish-grey near the anal angle. Secondaries deep black, the outer margin broadly greenish-grey, crossed by the black veins, but not glossy, as in *Castnia Erycina*, Westw. Under-side of both wings greenish-grey almost to the base, where it is black: the veins all black. The head, antennæ, thorax, and upper-side of the abdomen deep black. The under-side of the thorax and legs black; the abdomen bright red. Exp., 1½ in.

Hab.: Interior of Colombia.

This beautiful little species is allied to *C. Erycina*, Westw., from which it is at once distinguished by its much blacker colour, greyish-green under-side, and the bright red under-side of the abdomen, which is not banded with green as in *C. Erycina.*

CASTNIA PELLONIA, *sp. n.*

Primaries: the apical third deep black; from the base to beyond the middle orange-brown, shading off to pale yellow where it joins the black. A large round black spot at the end of the cell; a broad black line from the base extending beyond the middle of the cell, then curved downwards, beyond which is a narrow black line of the same shape reaching the outer margin; a wide black band extends from the base along the inner margin, but does not reach the anal angle. Secondaries deep black, with the costal margin and apex broadly bordered with bright orange-brown. The under-side the same as above, excepting that the black markings are all smaller. The fringe of the primaries black, that of the secondaries white. The head, thorax, and the upper-side of the abdomen black. The collar and the sides of the abdomen streaked with orange-brown. The under-side of the abdomen orange-yellow, banded with black. The antennæ yellow, black at the base. Legs dark brown. Exp., 3¾ in.

Hab.: Upper Amazons.

A fine distinct species, allied to *Castnia Buckleyi*, Druce.

CASTNIA MELESSUS, *sp. n.*

Primaries: the apical third black, crossed close to the apex by a band of three large yellow spots, which join a marginal row of yellow spots extending to the anal angle; the basal two-thirds of the wing reddish-brown; the costal margin black; a large black spot at the end of the cell joined to the costal margin on the upper-side; a central black curved line crossing the middle of the wing from the base to the outer margin just above the anal angle; a wide black band extends along the inner margin. Secondaries black, crossed from the base to the apex with a wide orange-red band, which is broken before it reaches the apex; a marginal row of orange-red spots extend from near the apex round the outer margin, but do not reach the anal angle; the under-side, as above, but paler in colour. The head, thorax, upper- and under-side of the abdomen and legs deep black; an orange-red line on each side of the abdomen. The base of the tegulæ orange-brown; a yellow band crosses the middle of the thorax. Antennæ yellow. Exp., 3¼ in.

Hab.: Upper Amazons.

This species is very distinct, but is allied to *Castnia Cratina*, Westw.

Circus Road, St. John's Wood:
February, 1890.

NOTES ON BRITISH *TORTRICES.*

BY CHAS. G. BARRETT, F.E.S.

(*Continued from vol.* xxiv, *page* 221).

Wilkinson (British *Tortrices*, p. 91) described as new a species under the name of *Catoptria parvulana*, giving also a figure, and *stating that it had* been taken in the year 1857 by Mr. Bond, in the

Isle of Wight, among mixed herbage. Both figure and description clearly indicate a very small form allied to *Scopoliana*, but destitute of the dark brown markings, which in that species so frequently enclose the pale dorsal blotch. This small form appeared to be unknown from any other locality, and so very few specimens were available to me when writing upon this group in 1873 (Ent. Mo. Mag., vol. x, p. 8), that my remarks there made are really of no value, further than that, I found among specimens sent as supposed *parvulana*, quite a different species, which I then supposed to be *æmulana*, Schl., but which afterwards proved to be distinct, and was described under the name of *tripoliana*. This species, however, did not occur among the original *parvulana* taken in the old locality by Mr. Bond and Mr. McLachlan, and has no immediate connection with the present subject, though I suspect that it may have had something to do with the introduction of the name *decolorana* into some of our lists and cabinets. *Decolorana* is a well-known and easily recognised species in the south of Europe, but has not as yet been found in these islands. But to return to *parvulana*: within the past two or three years, Mr. Fletcher, Mr. Vine, and Mr. Bankes have worked over the original locality, and similar spots near the south coast, with good results. I should, perhaps, have remarked earlier that Wilkinson's description and figure do not agree with *all* the small specimens taken by Messrs. Bond and McLachlan. Some of these *possess* the dark dorsal markings, but have been placed in collections with the rest as *parvulana*. Mr. Bankes has now been at the pains to get together and submit to me a very large number of the specimens taken and reared by himself and friends, and among them are many of the true *parvulana* form, as described. With these are others, equally small, in which the dorsal markings are very distinct and strong, others are larger, with and without dorsal markings, and range in size up to ordinary *Scopoliana*, from which they cannot be distinguished. Some of the small specimens—exceedingly glossy and beautiful in colour and markings—were reared from seed-heads of *Serratula tinctoria* by Mr. Fletcher; others were taken sitting on the flowers of the same plant; others, many of them larger, taken among mixed herbage, among which were found both *Serratula tinctoria* and *Centaurea nigra*. On comparing with my own series, I find that I have from Pembroke specimens taken among *Centaurea* quite as small as, and undistinguishable from, these small *Serratula* specimens, though the great majority are of normal size. It also appears that the form in which the dorsal markings are obsolete is very much more frequent in the female, at all sizes, than in the male—although variations occur on both sides,—and also that in some specimens these dorsal markings appear in a faintly cloudy degree, becoming more distinct in others, and forming a graduated series. After repeated and careful examinations, I am convinced that *parvulana* is nothing more than a variety of *Scopoliana*; its small size being mainly due to the dimensions of the seed-head of *Serratula tinctoria*, in which its larva usually seems to feed. A character which has been suggested as proper to *parvulana*—the yellowish head—is altogether unreliable, the same variation in head-colour appearing in most unmistakeable and full-sized *Scopoliana*, and giving place to brownish in many of the smallest specimens.

Parvulana has not, I think, been recognised as a distinct species on the continent. Wocke includes it in his list, but as a species unknown to him, and located only in England.

I have especially to thank my friend Mr. Eustace Bankes for furnishing this most exhaustive series for examination.

Somerset House:
February 6th, 1890.

NOTES ON THE *COLEOPTERA* AND *LEPIDOPTERA* (*RHOPALOCERA*) OF NORWAY.

BY G. C. CHAMPION, F.Z.S.

I propose to give a short account of the *Coleoptera* and *Lepidoptera* (or rather of the *Rhopalocera*) observed by me in Norway from June 16th to July 13th last. That on the *Lepidoptera* will supplement Dr. Jordan's papers in this magazine on the same subject.

The *Coleoptera*, as might be expected, are very similar to those of the Scottish highlands, only they are not nearly so numerous as in such localities as Aviemore or Braemar; various *Longicornia*, *Hydradephaga*, *Staphylinidæ*, *Malocodermata*, &c., not found in Britain, however, occurred. But with the *Rhopalocera*, owing, no doubt, to the short but very hot and dry summer, at least in the eastern part of the country, it is very different; and, I must say, I was unprepared to meet with such numbers so far north; these, however, mostly consisting of three or four species of *Argynnis*, the individuals of this genus apparently outnumbering all the other butterflies together in Norway. In two localities, one at a low elevation, Lillehammer, and the other at a much higher one, Domaas, I saw butterflies almost as numerous in individuals, of course not in species, as I have seen them in certain localities in Switzerland. In these places, at the time of my visit, the grass had not been cut; and the meadows were simply swarming with *Argynnis* of various species, as well as with various *Lycæna*, *Polyommatus*, &c. The exceedingly hot and dry weather, with a cloudless sky for days or even weeks together, prevailing during the latter, as it had done during the earlier part of June, resembling that of a tropical rather than that of a boreal region, probably accounted for the abundance of certain butterflies, and, perhaps, for the rarity of many *Coleoptera*; it, no doubt, favoured the development of the mosquitos, which are a great pest in the high ground in Norway. The best time for collecting purposes would appear to be early in June, the change from spring to summer being very sudden, and the summer very short; and, for many butterflies, before the haymaking is finished. The ingenious devices used in many places for irrigating purposes where the soil is very sandy, bear witness, at least in the Gudbrandsdal, to a short dry summer. I saw few, if any, really old trees in the extensive pine-forests; the firs and birches alike appear to be cut periodically, and they are not allowed to attain any great size. From Christiania I took train to Eidsvold, thence along the Mjösen lake to Lillehammer by steamer; after staying two or three days here, a good locality for many insects, I made my way by degrees, "per carriole," by the Gudbrandsdal to Domaas, and then to the Dovrefjeld, staying some days at Jerkin* and at Kongsvold, and devoting one day to the ascent of Snæhætten, about 7600 feet. From the Dovrefjeld I returned by the same road to Domaas, and continued by way of the Gudbrandsdal and the Romsdal to Veblungsnæs, and thence by the so-called land-route to Bergen. The Dovrefjeld and certain places in the Gudbrandsdal were the best localities I noticed for collecting purposes; but it must be confessed that the only place I stayed long enough to investigate at all thoroughly was the Dovrefjeld. The latter, with its barren-looking moorland, looks uninteresting after the more fertile valleys, though it, no doubt, possesses more interesting plants and insects; at this elevation, about 3000 feet, we are above the pine-forest region, but there is plenty of birch and sallow in places, and also of the scrubby *Betula nana*, and an abundance of many flowering plants. From the snow-clad summit of Snæhætten nothing but barren moorland is to be seen; not a tree is visible; and the surrounding mountains completely shut out any view of the neighbouring valleys. A few insects not seen elsewhere were, however, obtained on the summit. From Veblungsnæs to Bergen, including a trip to the Hardanger, I saw exceedingly few insects of any kind; possibly from a much cooler and more cloudy condition of the weather. While in Christiania, I paid a visit to the Royal University Museum, and was fortunate enough to make the acquaintance of Mr. W. M. Schöyen, the Conservator of the Zoological Department, who kindly gave me a good deal of information as to the best localities for many Norwegian *Coleoptera* and *Lepidoptera*. Mr. Schöyen subsequently furnished me with an amended list of the Norwegian *Rhopalocera*, which is inserted below; it includes 93 species. Entomologists who intend making any stay in Norway would do well to inspect the extensive collection of Norwegian *Lepidoptera* in the University Museum, the specimens being all carefully labelled as to locality, &c., before starting for whatever part they intend to visit. The following notes on the *Coleoptera* and *Lepidoptera* add very little of importance to Siebke's Enumeratio Insectorum Norvegicorum [fasc. ii, pp. 61—334, *Coleoptera* (1875), and fasc. iii, *Lepidoptera* (1876), the latter edited by Schneider]; they are written merely to give some idea of the Norwegian fauna, and in the hope that they may induce more British Entomologists to visit the country. I can cordially re-echo Dr. Jordan's concluding remarks (*cf.* xxv, p. 444) as to the pleasure to be derived from a stay at Jerkin, in the Dovrefjeld; but I would by no means recommend the route he appears to take, viz., train from Christiania to Lille Elvedal and thence by road to Jerkin. The route *viâ* Eidsvold, Lillehammer, and the Gudbrandsdal, though considerably longer and involving much more driving, is infinitely preferable, if the time can be spared. Of the comfortable "stations," and the moderate charges in the Gudbrandsdal, I need not speak here.

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* There is a more direct route from Christiania to this place, viz., by taking the train to Lille Elvedal, and then posting the rest of the distance, 84 kilometres.

The following are the most noteworthy *Coleoptera* captured; marked thus * not British.

Cicindela sylvatica, Linn., Toftemoen. *Carabus catenulatus*, Scop., Jerkin; Dovrefjeld examples resemble the small variety found in the highlands of Scotland. *C. glabratus*, Payk., Jerkin. *Cymindis vaporariorum*, Linn., Jerkin. *Nebria Gyllenhali*, Schönh., Jerkin. *Patrobus septentrionis*, Dej., Kongsvold and Jerkin. *P. assimilis*, Chaud., Kongsvold, Jerkin, and Stueflaaten. *Amara alpina*, Fabr., Jerkin and Kongsvold; numerous examples. This is one of the commonest species of *Carabidæ* in the Dovrefjeld; most of the specimens captured have a broad longitudinal reddish patch on each elytron. *A. Quenseli*, Schönh., Domaas; not rare, under stones, at an elevation of about 2000 feet; Norwegian examples do not differ from others found by myself at Braemar, and on the Eggisch-horn, Switzerland. *A. brunnea*, Gyll.,* Jerkin, one example. *Pterostichus lepidus*, Fabr., Domaas. *Hydroporus lapponum*, Gyll.,* high ground above Domaas, at about 4000 feet elevation; a few examples. *H. melanocephalus*, Gyll., Domaas. *H. nigrita*, Fabr., Jerkin. *Ilybius ustior, Gyll.,* high ground above Domaas. *Rhantus bistriatus*, Bergstr., Jerkin.

Gaurodytes confinis, Gyll.,* Jerkin; one example. *G. lapponicus*, Th.,* high ground above Domaas, and also at Jerkin; this insect appears to be exceedingly closely allied to *G. congener*, Payk. *G. bipustulatus*, Linn., near Jerkin; Dovrefjeld examples are of small size, and resemble the var. *solieri*, Aub.; most of the females captured have the elytra much suffused with reddish. *Thliboptera bicolor*, Rey,* Domaas, not uncommonly under stones, in company with *Amara Quenseli*. These examples agree with one thus named in Dr. Sharp's collection from that of Sahlberg; the species is not included in Siebke's list; *T. bicolor* is recorded from Germany and France. *Homalota graminicola*, Grav., Kongsvold. *Tachinus pallipes*, Grav., Kongsvold; not rare, in dung. *Staphylinus erythropterus*, Linn., Vestnæs and Soholt. *Quedionuchus lævigatus*, Gyll., Stueflaaten. *Olisthærus megacephalus*, Zett.,* Toftemoen; two examples, under pine bark. *Olophrum boreale*, Payk.,* Kongsvold; in abundance, in very wet moss at the side of a waterfall. *Acidota crenata*, Fabr., summit of Snæhætten, 7600 feet; three examples, on the snow. *Anthophagus alpinus*, Payk., and *A. homalinus*, Zett.,* Domaas, Jerkin, and Kongsvold; common on birch. *Geodromicus plagiatus*, Er., Kongsvold; common, in wet moss in waterfall; these examples are dark in colour, and almost intermediate in the length of the elytra between *G. plagiatus* and *G. globulicollis*, Mann. *Deliphrum tectum*, Payk., Kongsvold; abundant, in dung. *Homalium* (*Phlœostiba*) *pineti*, Th., Domaas; under pine bark; this species is not included in Siebke's list. *Oxytelus luteipennis*, Er., Kongsvold and Jerkin; a dark form of this insect is not uncommon in the Dovrefjeld. The species is not mentioned in Siebke's list. *Silpha lapponica*, Fabr.,* and *S. opaca*, Linn., high ground above Domaas. *Cerylon histeroides*, Fabr., Domaas. *Endomychus coccineus*, Linn., Utvik. *Byrrhus fasciatus*, Fabr., Domaas and Kongsvold. *Aphodius piceus*, Gyll.,* and *A. lapponum*, Schönh., Kongsvold, Jerkin, Domaas; the former not uncommon, the latter abundant. *Serica brunnea*, Linn., Soholt. *Trichius fasciatus*, Linn., Christiansand. *Anthaxia quadripunctata*, Linn.,* Lillehammer; common, on flowers. *Corymbites æneus*, Linn., Lillehammer. *C. holosericeus*, Oliv., Soholt. *Cryptohypnus* sp.?,* Jerkin; one example; I am unable to identify this species from Thomson. It is allied to *C. maritimus*, Curt.; but has the thorax more rounded at the sides, and broader; and the two basal joints of the antennæ testaceous. *C. riparius*, Fabr., Jerkin. *Sericosomus brunneus*, Linn., Lillehammer. *Dictyoptera sanguinea*, Linn.,* Stueflaaten; three examples, on the trunk of a fallen Scotch fir. *Telephorus obscurus*, Gyll., Domaas. *T. assimilis*, Payk.,* Lillehammer and Domaas; a female example from each locality, and apparently belonging to this species. *T. pilosus*, Payk.,* Jerkin; several examples of both sexes, including the pale variety, on dwarf sallow. *T. figuratus*, Mann., Lillehammer. *Rhagonycha elongata*, Fall., Domaas and Jerkin. *R. ater*, Linn.,* Lillehammer. *Podabrus alpinus*, Payk., Christiansand, Lillehammer, Dovrefjeld, &c. *Dasytes niger*, Gyll., Jerkin; not rare, on flowers of *Geranium sylvaticum*; Dovrefjeld examples do not differ from those from the New Forest; the difference of habitat is remarkable. *Cœnocara bovistæ*, Hoffm., Domaas; three examples. This species is not included in Siebke's list; it is not, however, new to Scandinavia. *Ernobius nigrinus*, St., Jerkin; above the pine-region. *Mordella aculeata*, Gyll.,* Lillehammer. *Anaspis rufilabris*, Gyll., Soholt. *Chrysanthia viridis*, Redt.,* Christiansand; on dandelion flowers. *Otiorhynchus maurus*, Gyll., Jerkin, Domaas. *O. rugifrons*, Gyll., Domaas, Kongsvold. *Apion Gyllenhali*, Kirby, Domaas; this species is not included in Siebke's list. *Asemum striatum*, Linn., Domaas, Stueflaaten. *Rhagium indagator*, Fabr., Domaas, Stueflaaten. *Toxotus lamed*, Linn.,* Lillehammer; in the village. *Pachyta virginea*, Linn.,* Lillehammer; not rare on *Umbelliferæ*. *P. strigilata*, Fabr.,* Lillehammer. *P. sexmaculata*, Linn., Domaas; one example. I found a single specimen of this alpine species on the Eggisch-horn, Switzerland, in 1883; as in Scotland, it seems usually to occur singly. *Strangalia quadrifasciata*, Linn., Lillehammer. *Leptura maculicornis*, Deg.,* Lillehammer; not rare, on *Umbelliferæ*. *L. sanguinolenta*, Linn., Soholt. *Acanthocinus ædilis*, Linn., Stueflaaten; common, on pine logs. *Pogonocherus fasciculatus*, Deg., Lesjeværk. *Monohammus sutor*, Linn., Stueflaaten; abundant, on fresh pine logs. *Saperda scalaris*, Linn., Jerkin; two examples, on birch. *Donacia typhæ*, Brahm., Christiansand. *Chrysomela marginata*, Linn., Stueflaaten. *Lina collaris*, Linn., Jerkin; in profusion, on dwarf sallow. *Gonioctena pallida*, Linn., Jerkin. *Adimonia tanaceti*, Linn., Lillehammer. *Coccinella magnifica*, Redt. (*labilis*, Muls.), Domaas; one example. *C. trifasciata*, Linn.,* Jerkin; two specimens of this very distinct species occurred on dwarf sallow. *Halyzia oblongo-guttata*, Linn., Christiansand. *H. 14-guttata*, Linn., Domaas, Stueflaaten.

The following is a list of the most noteworthy *Lepidoptera* observed; those that were *only seen* were seen sufficiently well to make sure of their identification. Most of the more generally distributed and commoner species are omitted, as they have recently been enumerated in this magazine by Dr. Jordan (*cf.* xxv, pp. 439—444). I may say that I only paid attention to *Lepidoptera* when *Coleoptera* were scarce, and that, beyond collecting a few day-flying moths, I made no attempt to work at anything but *Rhopalocera*. Neither Dr. Jordan in his three summers' collecting, nor I in one, obtained examples of much more than one-fourth of the total number of species of *Rhopalocera* known to inhabit Norway; nor did either of us obtain any of the more interesting Norwegian forms. These latter, however, it must be remembered, are nearly all confined to the more northern parts of the country. One of the well-known species of the Dovrefjeld, *Œneis Norna*, Thunb., I failed to meet with, though it is said to be on the wing in June and July.

Parnassius Apollo, Linn.—Seen not uncommonly while driving along the Gudbrandsal, between Skjæggestad and Storklevstad.

Leucophasia sinapis, Linn.—Seen at Lillehammer.

Aporia cratægi, Linn.—Christiansand, common; also seen at Lillehammer.

Polyommatus Hippothoë (*chryseis*, S. V.).—Domaas, not rare. This (or *P. virgaureæ*, Linn.) must be the large *Polyommatus* "seen many times" by Dr. Jordan.

Lycæna Eumedon, Esp.—Lillehammer, one example only. *L. Argus*, Linn.—Not uncommon; Domaas, Jerkin. *L. Pheretes*, Hübn.—Very abundant in the Dovrefjeld (Jerkin, &c.), at elevations of about 3000 feet; occurs also, more sparingly, at lower elevations, Lillehammer, Domaas, &c. This species is far more abundant than *L. Icarus*, Rott., in the Dovrefjeld.

Limenitis populi, Linn.—Christiansand, one example seen.

Vanessa c-album, Linn.—Fladmark, Romsdal, one specimen seen. *V. urticæ*, Linn.—Seen commonly at very many places, including the summit of Snæhætten, at an elevation of about 7600 feet.

Melitæa Athalia, Rott.—Lillehammer, Jerkin.

Argynnis Euphrosyne, Linn.—Domaas, Lillehammer. *A. Selene*, Schiff.—Lillehammer, very common. *A. Niobe*, Linn.—Domaas; this species occurred in the greatest profusion in a meadow near the river, and half a dozen specimens could be captured in one sweep of the net. All but three or four of the large number of examples caught were the variety *eris*, Meig. *A. Ino*, Rott.—Lillehammer; common on the hill side near the Mesna waterfall. *A. Aglaia*, Linn.—Lillehammer, Jerkin, &c., common. *A. Pales*, Schiff.—Domaas, Jerkin. This exceedingly variable insect is common above Domaas near the limit of the pine-region, and still more abundant in the higher ground at Jerkin; an example of the lowland form, *Arsilache*, Esp., was captured at Lillehammer. *A. Pales* is one of the most interesting, and at the same time one of the commonest, butterflies of the Dovrefjeld. It has an exceedingly rapid jerky flight.

Erebia Ligea, Linn.—Common in the Dovrefjeld (Jerkin, Kongsvold, &c.); also seen or caught in the lower ground at many different places, Lillehammer, Holaker, &c. *E. lappona*, Esp.—Dovrefjeld, Jerkin; in the same localities as *E. Ligea*, but much more rarely.

Pararge Hiera, Fabr.—Lillehammer; one example caught, others seen.

Epinephele hyperanthus, Linn.—Lillehammer.

Syrichthus serratulæ, Ramb.—Domaas, Stueflaaten; one example from each locality; these seem to approach *S. alveus*, Hübn., very closely, but are, according to Schöyen, more correctly referred to *S. serratulæ*.

Zygæna exulans, Hoch.—Common above Domaas, and also in the Dovrefjeld at Jerkin. I also found an example in the snow on the summit of Snæhætten. This is, no doubt, the species of *Zygæna* "seen" by Dr. Jordan; it is a well-known Dovrefjeld insect.

Procris statices, Linn., v. *Geryon*, Hübn.—Lillehammer.

Anarta melaleuca, Thunb.—Jerkin.

Psodos coracina, Esp.—Jerkin; common, in open rocky places.

Pygmæna fusca, Thunb.—Jerkin; abundant, in company with *Psodos coracina*; males only noticed.

Gnophos sordaria, Thunb.—Domaas; also seen commonly at Jerkin and elsewhere on the wing towards evening.

Hercyna Schrankiana, Hoch.—Jerkin; one example. This insect resembles *Psodos* and *Pygmæna*, and was found in company with them.

Catasta auriciliella, Hübn.—Domaas; one example.

LIST OF THE *RHOPALOCERA* OF NORWAY, COMMUNICATED BY W. M. SCHÖYEN.

1. Papilio Machaon, Linn.
2. Parnassius Apollo, Linn.
3. Aporia cratægi, Linn.
4. Pieris brassicæ, Linn.
5. „ rapæ, Linn.
6. „ napi, Linn.
7. „ Daplidice, Linn.*
8. Anthocharis cardamines, Linn.
9. Leucophasia sinapis, Linn.
10. Colias Palæno, Linn.
11. „ Nastes, Boisd.*
12. „ Hecla, Lef.
13. „ Edusa, Fabr.*
14. Rhodocera rhamni, Linn.

15. Thecla betulæ, Linn.
16. „ w-album, Knoch.
17. „ quercûs, Linn.
18. „ rubi, Linn.
19. Polyommatus virgaureæ, Linn.
20. „ Hippothoë, Linn.
21. „ Phlæas, Linn.
22. „ Amphidamas.*
23. Lycæna Argus, Linn.
24. „ Ægon, W. V.*
25. „ Optilete, Knoch.
26. „ Orion, Pall.
27. „ Pheretes, Hübn.
28. „ Aquilo, Boisd.*
29. „ Astrarche, Bergstr.
30. „ Icarus, Rott.
31. „ Eumedon, Esp.
32. „ Amanda, Schneid.
33. „ Argiolus, Linn.
34. „ minima, Fuessl.
35. „ semiargus, Rott.
36. „ Cyllarus, Rott.
37. Limenitis populi, Linn.
38. Vanessa c-album, Linn.
39. „ urticæ, Linn.
40. „ Antiopa, Linn.
41. „ Atalanta, Linn.
42. „ cardui, Linn.
43. Melitæa Iduna, Dalm.
44. „ Cinxia, Linn.
45. „ Dictynna, Esp.
46. „ Athalia, Rott.
47. „ Aurelia, Nick.
48. „ Parthenie, Borkh.*
49. Argynnis Aphirape, Hübn.
50. „ Selene, Schiff.
51. „ Euphrosyne, Linn.
52. „ Pales, Schiff. (and Arsilache, Esp.)
53. „ Chariclea, Schneid.
54. „ polaris, Boisd.
55. Argynnis Freija, Thunb.
56. „ Frigga, Thunb.
57. „ Thore, Hübn.
58. „ Ino, Rott.
59. „ Lathonia, Linn.
60. „ Aglaia, Linn.
61. „ Niobe, Linn.
62. „ Adippe, Linn.
63. „ Paphia, Linn.
64. Erebia Medusa, S. V. (and v. polaris, Staud.).
65. „ lappona, Esp.
66. „ Ligea, Linn.
67. „ Embla, Thunb.
68. „ Disa, Thunb.
69. Œneis Jutta, Hübn.
70. „ Norna, Thunb.
71. „ Bore, Schneid.
72. Satyrus Semele, Linn.
73. „ Alcyone, Schiff.
74. Pararge Mæra, Linn.
75. „ Hiera, Fabr.
76. „ Megæra, Linn.
77. „ Ægeria, Linn.
78. Epinephele Janira, Linn.
79. „ hyperanthus, Linn.
80. Cœnonympha Hero, Linn.
81. „ Arcania, Linn.
82. „ Pamphilus, Linn.
83. „ Tiphon, Rott.
84. Syrichthus serratulæ, Ramb.
85. „ Andromedæ, Wall.
86. „ centaureæ, Ramb.
87. „ malvæ, Linn.
88. Nisoniades tages, Linn.
89. Hesperia lineola, Ochs.
90. „ sylvanus, Esp.
91. „ comma, Linn.
92. Carterocephalus Silvius, Knoch.
93. „ Palæmon, Pall.

* Species not included in Siebke's (Schneider's) list of 1876.

Four species included in Siebke's (Schneider's) list of 1876 are incorrectly given as Norwegian; these are—*Lycæna Bellargus*, Rott., and *L. Donzelii*, Boisd., and *Vanessa polychloros*, Linn., and *V. Io*, Linn.

11, Caldervale Road, Clapham, S.W.:
December, 1889.

NOTES ON SOME BRITISH AND EXOTIC *COCCIDÆ* (No. 15).

BY J. W. DOUGLAS, F.E.S.

CROSSOTOSOMA, *n. g.*

♀. Antennæ of 11 joints. Eyes not facetted, oval, produced in the form of a subconical truncate tube. Rostrum present. Body surrounded with a marginal fringe of long opaque processes. Anal ring not evident. Legs simple.

CROSSOTOSOMA ÆGYPTIACUM, *n. sp.*

Fig. 1.

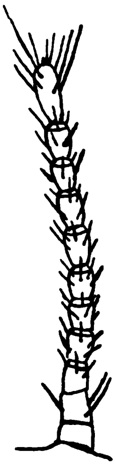
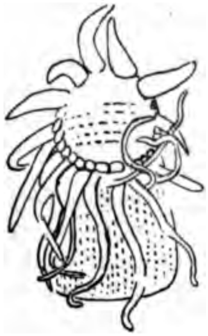


Fig. 3.



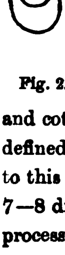


Fig. 2.

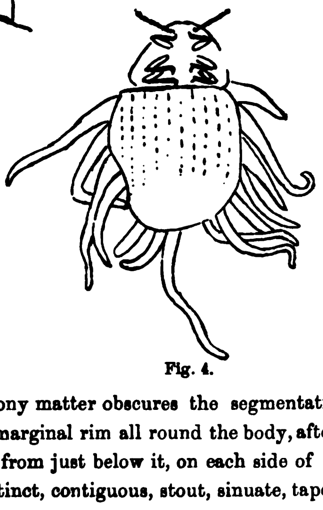


Fig. 4.

♀ adult. Deep orange, becoming black after death; broad oval, slightly convex above. Head small, rounded in front. Antennæ (fig. 1) black, short, stout, of 11 wide joints, with many projecting pale hairs; the first three cylindrical, 1st broadest, 3rd longest; 4th to 10th short, in length sub-equal, the sides curved out from the wide base to the rounded wider apex, the anterior margin of each with a pale ring; 11th much longer than the 3rd, sub-ovate, the base small, the apex rounded, the latter with many long hairs, two of them especially very long. Eyes (fig. 2, profile and front) black, shining, not facetted, projecting from a wide, oval base in the form of a short, subconical, truncate tube, of which one side is irregular, being constricted near the base; viewed in front the tube is translucent. Thoracic segments occupying nearly half the length of the body, strongly defined by incisions, those of the abdomen less so, but all distinctly marked. In the first stage of adultness the whole smooth surface has a pellicle of white waxen matter closely adherent, but easily detached, and often more or less rubbed off; eventually, as the ovisac is developed, exudation of waxen and cottony matter obscures the segmentation. At first there is a narrow, well-defined marginal rim all round the body, afterwards there is a flattened area exterior to this; from just below it, on each side of the abdomen, is a projecting fringe of 7—8 distinct, contiguous, stout, sinuate, tapering, waxen, snow-white, opaque, fragile processes, 3—5 mm. long, much curved round at the pointed ends, all, as a rule, tending downwards. In one specimen, sheltered within a curved leaf, a similar, but thicker, straighter, obtuse, upturned or horizontal appendage also proceeds from the sides of each of the thoracic segments, and two from the head (fig. 3), the latter close together, the others wide apart. This is the most perfect example, and I regard it as typical of the species; in the other specimens these appendages, which are very fragile, have been more or less broken off by the incidents of the position of the insects on loose leaves during transit. Close under the processes at the end of the abdomen, and reaching backwards as far as their extremities, is the white, broad, plump, posteriorly rounded, cottony ovisac: it then curves under the abdomen and completely covers the under-side of it, closely attached thereto at the edges, forming a capacious receptacle, quite smooth externally, but with the faintest indications of longitudinal striæ (fig. 4); above this the abdomen remains horizontal.

On the under-side the margin of the body all round is closely set with fine, projecting hairs; terminal segment rounded; anal ring not evident.

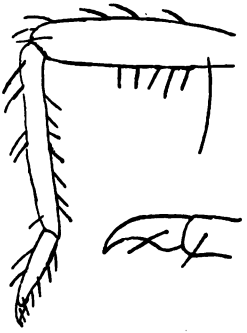


Fig. 5.

Rostrum small, conical, black, seta rather long, brown. Legs (fig. 5) black, with fine long hairs; femora with one specially long hair on the inner side; tibiæ two and a half times longer than the tarsi; claw short; no capitate digitules.

Length of body 5, breadth 4 mm.

Young larva (fig. 6). A few found under two of the most mature ovisacs. Yellowish, oval. Antennæ of six joints, the last long, obtuse-fusiform, all with long hairs, two of them specially longer on the last joint. The last segment of the abdomen with a rounded median emargination; each of the small resulting side lobes, sharply denticulate on the margin, bears three long setæ (thus six in all), each of them springing from a small tubercle.

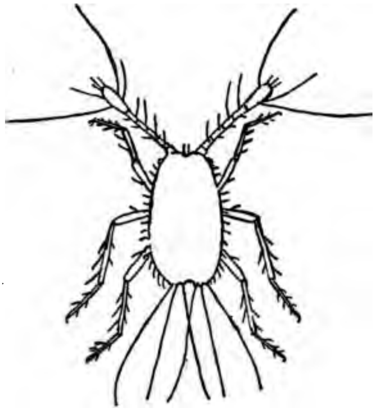


Fig. 6.

In the larva with its six caudal setæ, and in the adult ♀ with 11 joints in the antennæ, there are suggestions of the genus *Icerya*, but the form of the joints is different and most of the characters, notably the unique structure of the eyes, are divergent, as also they are, variously, from the other genera of *Monophlebidæ*, of which *Guerinia* alone has similar subpyriform joints in the antennæ. The long, circular, marginal processes are solid, and would be cylinders if they were of uniform size throughout; they are each moulded on and supported by a hair, and are quite analogous to the lamellæ of the genus *Orthezia*.

On November 2nd, 1889, I received several ♀ specimens of this remarkable Coccid from Mr. D. Morris, Assistant Director of the Royal Gardens, Kew, to whom they had been sent from Alexandria, Egypt, where "they were causing immense injury to fruit trees;" they were for the most part alive, and moved slowly if disturbed. There was no trace of a male in any stage of development, which was unfortunate, for the imago would afford good generic characters.

I am indebted to Mr. G. S. Saunders for the illustrations.

8, Beaufort Gardens, Lewisham:
January, 1890.

Hemiptera-Heteroptera at Dover and its vicinity.—For the past five years I have collected the *Heteroptera* of this district, and as this part of the coast seems rather rich in certain genera of the larger *Heteroptera*, I think the following notes will be of interest to collectors elsewhere.

Odontoscelis fuliginosus, L., sandhills, Deal, scarce, and the male and female always found in company. *Eurygaster maurus*, L., common, by sweeping knapweed, &c., in August, and in sandy moss on the cliffs in the spring, Dover; *E. niger*, F., one specimen on the sandhills at Deal, September, 1885. *Podops inunctus*, F., abundant in moss, sand, &c., Deal and Dover. *Sehirus bicolor*, L., abundant, lanes, Dover; *S. albomarginatus*, F., common, sweeping in lanes, Dover. *S. biguttatus*, L., not common, chalky lanes, Dover. *Sciocoris cursitans*, F., common, sandhills, Deal. *Ælia acuminata*, L., sweeping, Deal. *Strachia oleracea*, L., cliffs, Dover. *Pentatoma verbasci*, De G., cliffs, Dover; *P. viridissimum*, Poda, and *Piezodorus lituratus* also occur. *Acanthosoma hæmorrhoidale*, L., is taken at Deal, and *Tropicoris rufipes*, L., is generally distributed. *Coreus scapha*, F., is abundant under the cliffs at St. Margaret's Bay, but is a very local insect, confining itself to a small space of ground, it also occurs in the Warren at Folkestone. *Syromastes marginatus*, L., one, Dover. *Pseudophlæus Fallenii*, Schill., common under *Erodium* at Deal: a remarkable black variety is found occasionally. *Ceraleptus lividus*, Stein, one, sandhills, Deal, May, 1886. *Myrmus miriformis*, Fall., Folkestone, Dover, and Deal. *Chorosoma Schillingi*, Schml., common, rushes, Deal. *Stenocephalus agilis*, Scop., one, Folkestone, May, 1889. *Metacanthus punctipes*, Germ., sweeping, Dover. *Berytus pygmæus*, Reut., Dover, and *B. minor*, at Deal. *Lygæus equestris*, L., a single example only, on the 7th September, 1886 (*ante*, vol. xxiii, p. 106), unfortunately it has not been observed since. *Nysius thymi*, Wolff, common, Deal. *Scolopostethus*: this genus seems to be very abundant, and *affinis* the most common form. *S. neglectus*, Edw., n. sp., two examples. *S. decoratus*, Hahn., occasional. *Notochilus contractus*, H.-Sff., common in moss, Dover. *Calyptonotus lynceus*, F., Deal. *Trapezonotus agrestis*, Pz., abundant at Deal. *Drymus sylvaticus*, F., moss, Dover. *Rhyparochromus sabulicola*, Thoms., Deal; *R. prætextatus*, H.-Sff., abundantly at Deal; and *Peritrechus luniger*, Schill., *Plinthisus brevipennis*, Latr., *Stygnocoris sabulosus*, Schill., and *arenarius*, Hahn, are more or less common. *Heterogaster urticæ*, F., under *Erodium* (with *Pseudophlæus Fallenii*) at Deal. *Cymus claviculus*, Fall., Deal. *Piesma Laportei*, Fieb., moss, Dover. *Serenthia læta*, Fall., sweeping, Deal. *Monanthia cardui*, L., Dover and Deal. *Dictyonota crassicornis*, Fall., Deal, and *Acalypta parvula*, Fall., is abundant in moss everywhere. *Miris* lævigatus, L., is only too abundant; as is also *Leptopterna ferrugata*, Fall.; the three species of *Megalocerœa* are also common everywhere. *Teratocoris Saundersi*, D. & S., is found on rushes at Deal. *Pantilius tunicatus*, F., and *Phytocoris populi*, L., *tiliœ*, F., *varipes*, Boh., and *ulmi*, L., at Dover. *Miridius quadrivirgatus*, Costa, is sometimes locally abundant. *Oncognathus binotatus*, F., is common, with all the varieties. *Calocoris fulvomaculatus*, De G., amongst nut at Dover, and *C. roseomaculatus*, De G., by beating *Eupatorium cannabinum* at Kingsdown; *C. chenopodii*, Fall., and *C. bipunctatus*, F., are abundant everywhere; and *Rhopalotomus ater*, L., *Capsus laniarius*, L., and *Liocoris tripustulatus*, F., are also plentiful. *Pœciloscytus Gyllenhalii*, F., and *unifasciatus*, F., are common at Dover, and two examples of *P. nigrita*, Fall., were obtained this year in July. All the genus *Lygus* are represented, except *pastinacœ*, Fall., *cervinus*, H.-Sff., *atomarius*, Meyer., and *viscicola*, Put.; *Camptobrochis lutescens*, Schill., *Pithanus Maerkeli*, H.-Sff., *Globiceps flavomaculatus*, F., *Cyllocoris histrionicus*, L., *Campyloneura virgula*, H.-Sff., *Aëtorhinus angulatus*, Fall., and *Systellonotus triguttatus*, L., are taken occasionally. *Dicyphus epilobii*, Reut., common on *Epilobium*; *D. stachydis*, Reut., one, Dover. *Pilophorus perplexus*, D. & S., one, Deal. *Orthotylus nassatus*, F., Deal. *Heterotoma merioptera*, Scop., common everywhere. *Macrocoleus molliculus*, Fall., Dover, by sweeping, and *M. Paykulli*, Fall., by shaking *Ononis*, at Folkestone. *Oncotylus decolor*, Fall., at Deal, by sweeping rushes, &c. *Phylus melanocephalus*, L., *coryli*, L., and *avellanœ*, H.-Sff., are common on nut; and *Psallus varians*, H.-Sff., *Plagiognathus viridulus*, Fall., and *arbustorum*, F., are common everywhere. *Anthocoris nemorum*, L., and *nemoralis*, F., are abundant. *Triphleps minuta*, L., at Deal, by sweeping. *Lyctocoris campestris*, F., on fences, and generally distributed. *Acanthia lectularia*, L., perhaps rarer than in some towns (?)! *Coranus subapterus*, De G., under *Erodium*, Deal. *Reduvius personatus*, L., flies to light, Deal and Dover. All the genus *Nabis* are represented, except *lineatus*, Dahlb., which, I think, might some day turn up in Sandwich marshes. *Salda pilosa*, Fall., *littoralis*, L., and *cincta*, H.-Sff., occur at Pegwell Bay, Deal, and Dover respectively. *Hydrometra stagnorum*, De G., *Gerris thoracica*, Schum., *Velia currens*, F. (undeveloped), and *Nepa cinerea*, L., are common. *Gerris Najas*, De G., occurs at Deal; also *Naucoris cimicoides*, L., *Notonecta glauca*, F., is in every pond; but the var. *furcata* occurs only at Folkestone Warren, unaccompanied by the type; the variety *maculata*, F., I have not yet observed. *Plea minutissima*, F., *Corixa Geoffroyi*, Leach, *Panzeri*, Fieb., *hieroglyphica*, Dup., *Linnei*, Fieb., *Sahlbergi*, Fieb., *striata*, Fieb., *Fallenii*, Fieb., *mœsta*, Fieb., and *Fabricii*, Fieb., are Deal species; and *Cymatia coleoptrata*, F., is abundant at Folkestone.

There must be a great many more species to be recorded from this district as time may prove; seldom a season passes without my adding something to the list; and I have the disadvantage of working entirely alone.—C. G. HALL, Dover: *December 17th*, 1889.

Stenamma Westwoodi, &c., at Maidstone.—At the end of August or the beginning of September, 1887, I took two females of this rare ant. They were at rest on the inside of a half-opened window. I did not know at the time what they were; but I have since sent one of them to Mr. E. Saunders, who has kindly identified it for me. I have been unable to meet with it since. On July 2nd of the following summer my friend, Mr. W. H. Bennett, took *Crabro gonager* ♀ near Allington Locks, on new oak palings; and on September 16th, I took *Mimesa Shuckardi* ♀ on a sandy bank near Penenden Heath. Both species occurred singly.—G. E. FRISBY, *6, Church* Street, Maidstone: *February 11th*, 1890.

Cis bilamellatus breeding in captivity.—When, in the autumn of 1884, I found this hitherto unrecorded insect in such profusion, I put away in a canvas bag a few pieces of fungus which were tenanted by it, but not in sufficient numbers to repay the trouble of examination. A few weeks ago, on opening the bag, I found the beetle in multitudes, and the fungus nearly all demolished. For more than five years, therefore, the insect has been increasing and multiplying in confinement, and, to all appearance, it will continue to do so until the last fragment of the fungus has been devoured.—THEODORE WOOD, Baldock, Herts: *February 8th*, 1890.

Harpalus obscurus, F. (*stictus, Steph.*).—I took three specimens of the above (two males and a female) on June 25th, 1889, under a piece of chalk on the "Devil's Dyke," about half-way between the village of Reach and the point where the Dyke is cut by the Cambridge and Mildenhall line, near Swaffham Prior, Cambs.—H. R. TOTTENHAM, St. John's College, Cambridge: *February*, 1890.

[The occurrence of this species in its old locality is very interesting. It appears to be extremely rare in England; it is intermediate between *H. sabulicola*, Panz., and the common *H. rotundicollis*, Fairm. (which is the *H. obscurus* of Dawson). The posterior angles of the thorax are not so marked as in the former of these species, and more marked than in the latter, and it may be further distinguished from both of them by having the apex of the elytra deeply excised and of its usually darker colour; it is of the same size as *H. sabulicola*, and Dr. Power once told me that in former years some of his specimens had been distributed as this species. I am much indebted to Mr. Tottenham for one of the specimens referred to.—W. W. F.]

Casual captures of Coleoptera.—The following species of *Coleoptera* met with by me at various times and places during the summer and autumn of 1889, may be worth noting in this Magazine:—

At Plymouth, in May: *Aëpus marinus* and *Robinii*, both in abundance; *Sipalia testacea*, a few specimens, and *Pentarthrum Huttoni*, abundantly in white poplar (all these I owe to the kindness of Mr. J. H. Keys, who accompanied me to their respective head-quarters); also, at Whitsand Bay: *Harpalus tenebrosus, Hydnobius punctatissimus, Otiorhynchus ambiguus, Mecinus circulatus*, and *Rhopalomesites Tardii*, the latter in an ash-stump in a hedgerow.

At Cromer, during the wretched weather of Whitsuntide: *Gnathoncus rotundatus*, several, under the remains of a dead fowl, and with them one specimen, possibly referable to *G. punctulatus*, Thoms.: *Baris abrotani*, not scarce, under *Reseda lutea*, by the side of a newly made road, and *Ceuthorhynchus resedæ*, in its old locality, very sparingly.

At Norwich, *Silusa rubiginosa*, in a *Cossus*-infested elm.

At Ramsey, Essex, *Tiresias serra*, several in June by beating some very dry dead ivy (this beetle appears to be scarce in the perfect state, though not uncommonly found as a larva).

At Sheerness, and in the Isle of Sheppey: *Saprinus virescens, Mycetophagus 4-guttatus, Anisotoma dubia, litura, ovalis*, and *badia, Xylophilus populneus*, and very many other species, by sweeping on the edges of the cliffs and elsewhere; *Ochthebius auriculatus*, Rey, not rarely in tidal refuse; *Aphodius conspútus*, two specimens found in the town, in November.

In the Isle of Grain: *Salpingus æratus*, several small companies, under very dry loose barks on old posts, in August; also *Bledius tricornis* and *Dolichosoma lineare*, by sweeping.

At Chilham, Kent, on August 30th: *Cicones variegatus*, a good series, under the dry bark on a dead but standing beech tree; *Paromalus flavicornis* and *Cerylon ferrugineum*, under bark of ash-logs; *Agaricophagus cephalotes*, *Scydmænus angulatus*, and *Apteropeda globosa*, by evening sweeping.

At Chattenden Roughs, Kent: *Trachys minutus*, several, basking in the sunshine on sallow leaves; *Mordella fasciata*, plentiful in the flowers of *Chrysanthemum leucanthemum*, in July; *Helophorus Mulsanti*, *Hydnobius strigosus*, *Colon brunneum*, in numbers, and *Abdera bifasciata*, by sweeping. At Chatham, in October: *Homalium deplanatum*, several, and *Ceuthorhynchus tarsalis*, by sweeping.

At Mickleham, with Mr. G. C. Champion, on June 1st: *Colon angulare* and *Molorchus minor*, one of each, the latter beaten from the blossom of *Viburnum opulus*; *Ceuthorhynchus crux*, several by sweeping, apparently attached to *Arabis turrita*; *Cryptocephalus coryli* and *nitidulus*, the latter in abundance; *Psylliodes dulcamaræ*, not rare, and *Corymbites holosericeus*, in great numbers on young birch trees towards sunset, with very many of the usual Mickleham species. The smaller *Anisotomidæ (Colenis, &c.)* were individually more numerous on this occasion than in the previous experience of either of us.

At Darenth Wood, at the end of June, in company with Dr. Sharp: *Acrognathus mandibularis*, one taken by my companion, as usual, among saturated dead leaves almost in the water at the edge of a little swamp; *Triplax Lacordairei*, two specimens, casually found by beating birch, and three more in a *Boletus* on an ash stump; *Cryptocephalus fulcratus* and *punctiger*, also on birch, the latter species being common; *Harpalus punctatulus*, *Telephorus translucidus*, *Chrysomela lamina* (in plenty, off *Ballota nigra*), &c., &c.—James J. Walker, H.M.S. "Penguin," Sheerness: *January* 16*th*, 1890.

Coleoptera in the North of Ireland.—The following are additions to the Armagh list of *Coleoptera*. *Bembidium rufescens*, *Autalia rivularis*, *Encephalus complicans*, *Myllæna dubia*,* *M. intermedia*,* *M. brevicornis*,* *Quedius fumatus*,* *Q. attenuatus*, *Philonthus umbratilis*,* *Ph. sordidus* (Coney Island, Lough Neagh), *Actobius cinerascens*,* *Stenus guttula*, *S. brunnipes*, Steph. (*unicolor*, Er.), *Syntomium æneum* (the only previous record from Ireland is Dinnish Island, Galway, Mr. J. J. Walker), *Homalium riparium*, *H. Allardi*, *H. cæsum*,* *Megarthrus affinis*,* *Clambus armadillo*, *Necrodes littoralis* (a single specimen, which flew into the back kitchen in July last), *Choleva agilis*, *C. chrysomeloides*,* *Atomaria badia*,* *A. pusilla*, *A. atra*, *Ephistemus globosus*,* *E. gyrinoides*,* *Typhæa fumata*, *Simplocaria semistriata*, *Crepidodera rufipes*, *Thyamis pusilla*.* In a small bag of moss which a lady kindly brought me from the Sandhills at Portrush, Co. Antrim, I got *Quedius attenuatus*, *Othius læviusculus*, Steph., *Orobitis cyaneus*, and *Sitones griseus*. A bag of moss from Kildress, near Cookstown, Co. Tyrone, produced, along with a multitude of commoner things, *Notiophilus palustris*, *Calathus piceus*, *Othius melanocephalus*, and *Aleochara nitida*.

Mr. W. H. Patterson, of Belfast, sent me a specimen of *Geotrupes Typhœus*, which he had picked up dead on the Sandhills at Newcastle, Co. Down, on April 21st, 1889.

The most important among my other captures were—*Agabus unguicularis*, *Hypocyptus ovulum*, *Megacronus cingulatus*, *Mycetoporus splendidus*, *Lathrobium quadratum*, *L. longulum*, *Philonthus dimidiatus*, *Ph. cephalotes*, *Ph. puella*, *Acidota crenata*, *Agathidium lævigatum*, *Baridius T-album*, *Lithodactylus leucogaster*, *Tanysphyrus lemnæ*, *Otiorhynchus ligneus*, and *Errhinus æthiops*, of which I took a large number in flood-rubbish in the Mullinares in April last.

Those which I have marked with an asterisk have not, as far as I know, been recorded from Ireland before.—W. F. Johnson, Winder Terrace, Armagh: *February 1st*, 1890.

Oberea oculata, L.—Some fifty years ago this beautiful and conspicuous Longicorn was not uncommon in the Isle of Ely, and the fen districts of Cambridgeshire generally; it had not, however, occurred for a great number of years in England until 1883, when Dr. Lowe beat a specimen off *Hippophaë rhamnoides* near Romney: the locality is part of Romney Marshes, and Dr. Lowe writes to me as follows:—"The bank I was searching was close to the sea water, and I daresay had originally been made to keep off the tidal overflow; it was covered with *Hippophaë rhamnoides* (the sea-buckthorn), which was in fine fruit, and I can positively declare that I knocked the *Oberea oculata* off the above-named shrub." During the present winter the species has been taken by a friend of Mr. J. J. Walker's in Norfolk.—W. W. Fowler, Lincoln: *February 3rd*, 1890.

Mycterus curculionoides, F., from near Oxford.—Some time ago, Mr. Sidney Olliff kindly sent me a specimen of *Mycterus curculionoides*, F., of which he says: "it was, I believe, captured in the vicinity of Oxford in 1882, or thereabouts; the specimen was in a small collection of Oxford beetles given to me by Mr. M. Gunning; unfortunately, Mr. Gunning, who was unacquainted with the rarity of his capture, had no recollection of the precise locality where this particular specimen was found, although he had an impression that it was found on a thistle bed, but he was positive in his assertion that all his captures were from Oxford, and that no specimens had been added from other sources." The species has long been regarded as more or less doubtfully British. Stephens' record is: "Extremely rare in Britain. I possess a pair that were captured near Kingsbridge by the late Mr. Cranch; others are in the collection of the British Museum, taken at the same time, in June, 1815." Mr. Rye (British Beetles, p. 172) records it as once taken in England by Mr. T. V. Wollaston, but gives no locality; there is, or was, a specimen in Mr. Crotch's collection which, perhaps, is the one referred to by Mr. Rye.

The species very much resembles *Larinus* at first sight, and, like the species of that genus, is clothed with a pollen-like pubescence, which is very fugitive, and is renewable during life, if rubbed off.

The genus *Mycterus* is, as far as outward resemblance goes, extremely closely allied to the *Curculionidæ*, with which it is further connected by the form of the intermediate coxæ and scutellum; it is, however, separated from them by the heteromerous tarsi, and, to a less extent, by the filiform antennæ and the buccal organs.

The larvæ probably live in the roots and stems of the *Carduaceæ* and *Umbelliferæ*, on which the perfect insects are found.

The species belonging to the genus are chiefly found in the south of Europe, but Duval says that one species "remonte jusqu' au sud de l'Angleterre:" the evidence for *M. curculionoides* as indigenous is certainly not quite satisfactory as yet, but it deserves at all events a prominent admission to the British list quite as much as many other species.—ID.

On the larvæ of Glæa spadicea and G. vaccinii.—I made efforts to get larvæ of these species for some years, and reared numbers of *G. vaccinii*, but always failed to get larvæ of *G. spadicea* till last season, when Mr. W. H. B. Fletcher most kindly sent me some eggs. Both species are abundant here at sugar in autumn in most seasons, and most specimens can be easily distinguished, but there are a few rather puzzling as to which species they should belong to; these doubtful specimens are, I believe, almost always *spadicea*. In the spring, at sugar and sallows, only *vaccinii* is to be seen, and though I hoped some worn specimens might be *spadicea*, as a fact I never got from these eggs anything but *vaccinii*; and the larvæ they produced were always of one type, and the moths reared were always *vaccinii*.

Mr. Fletcher tells me the eggs of *spadicea* he got were laid in mid-winter by moths captured in autumn—they were hatching when I received them,—and, so far as examination in such circumstances showed, were not distinguishable from those of *vaccinii*. By beating oaks in May, I have met with the larva of *vaccinii* freely, of about one-fourth to one-third of an inch long, but never with that of *spadicea*.

The *spadicea* larvæ were about three weeks in advance of those of *vaccinii*, but by placing some of the former in a cool cellar, I retarded them, so that I obtained some of the full-grown larvæ of each side by side. Since the moth dies earlier, and the eggs are laid earlier (in late autumn or winter), it is probable that this difference in the ages of the two larvæ is normal.

The young larva of *G. vaccinii* is a very delicate-looking semi-translucent creature, of a pale flesh tint, with very few markings; that of *spadicea* looks rather more solid, and its prevailing tint is green or greenish-olive. When full-grown, the larvæ are very much alike, though the brown of *vaccinii* tends more to ruddy, that of *spadicea* to chocolate, but there is nothing in this to enable me to separate them; and the fine marblings, of which the markings consist, are precisely alike in pattern. I endeavoured to find some distinction in the dark markings of the head, and thought certain dark markings characteristic of *spadicea*, but found on examining a number of larvæ that these were variable, and varied in the same way in both species, with a greater inclination to the darker forms in *spadicea*. There is, however, one character that appears to be constant, as no specimen of the small number of *spadicea*, and the very large number of *vaccinii* I have had, shows any indication of approaching the character of the other species. Curiously enough, I picked up two full-grown larvæ in the garden, these both agreed with the *spadicea* reared from the egg and produced characteristic moths.

Where the dark dorsal colouring merges into the paler ventral, there is no very definite line in *vaccinii* dividing the one area from the other, not only is the change of tint gradual, but so far as it is rapid, it is waved or zigzag, and the change is only one of intensity; in *spadicea* the change occurs along a definite straight lateral line, and is from an olive-brown suddenly to a richly tinted reddish-orange region, forming, *in fact*, an orange spiracular band.

The area above this, up to sub-trapezoidal line is darker than the dorsal area in *spadicea*, in *vaccinii* there is not much difference of tint, and there is a tendency in *spadicea* to darker inter-trapezoidal lozenge markings.

In *vaccinii* the spiracles are black; in *spadicea* they are paler, with a black margin.

The suture marking off the clypeus at the lower angle of the impressed triangular mark is waved inwards, gently in *vaccinii*, but with a marked zigzag in *spadicea*.

My notes conclude with the statement that the definition of the lateral line and its different colouring, and the darker sub-trapezoidal area in *spadicea* are definite and constant differences, whilst the others are rather different in degree, and vary somewhat in individuals.—T. A. CHAPMAN, Firbank, Hereford: *February*, 1890.

A point concerning hybridization.—In May, 1888, while at Cambridge, I was breeding *Smerinthus ocellatus* and *tiliæ* at the same time. Wishing to obtain ova, I put two pairs of *ocellatus* and one pair of *tiliæ* together in a large box, and on looking in the evening found that the *ocellatus* had all paired. The pairing lasted about twenty hours, and I found them separated late the next afternoon. As far as I could see, the *tiliæ* had not paired at all. Later on that evening I looked at them again, and was much astonished to find one *ocellatus* ♀ *in cop.* with the ♂ *tiliæ*. I considered this the more extraordinary as the ♀ *ocellatus* had already paired with her natural spouse, and the ♂ *tiliæ* had selected an already impregnated ♀ of another species in preference to a virgin ♀ of its own. A good number of eggs were laid and hatched in due time; unfortunately, soon after they had hatched, I had to leave Cambridge, and the larvæ were left under the care of a friend. Most of them died whilst in the larval stage; a few pupated, but these failed to emerge, so I had no chance of observing whether any of the imagines would have shown signs of the cross. I may add, that the *ocellatus* came from larvæ found in Glamorganshire, and the *tiliæ* from pupæ dug up at Cambridge.—H. W. VIVIAN, Glanafon, Taibach, South Wales: *January* 31*st*, 1890.

Some Micro-Lepidoptera of the Chalk Hills near Reading.—I spent several afternoons last summer, from the end of June to the middle of July, collecting on the Oxfordshire Chalk Hills near here, and got many species which were very useful to me, and which may be worth mentioning. *Homœosoma nebulella* and *binævella*, *Tortrix cinnamomeana*, *Eupœcilia flaviciliana*, *Argyrolepia zephyrana* and *subbaumanniana*, *Conchylis dilucidana*, *Chrosis alcella*, *Orthotænia striana*, *Euchromia purpurana*, with many other commoner species. Also on another hillside I found *Phycis ornatella* and *dilutella* flying together in plenty at dusk, along with *Xanthosetia zœgana*.—W. HOLLAND, Southampton Street, Reading: *January* 21*st*, 1890.

Aciptilia paludum in the New Forest.—In a boggy hollow near Lyndhurst I netted two specimens of this little plume at dusk on the 13th of August, 1889. It was a very windy evening, and this was the only moth I could find moving.—ID.

Mecyna polygonalis, Tr., in New Zealand.—I do not know to what sources of information Mr. W. W. Smith has access, but unless I am greatly mistaken, his notes under the above heading in the February No. of this Magazine are wholly based on error. I can state positively the following facts:—

(1). *M. polygonalis* has never yet been taken in New Zealand.

(2). An allied species (*M. deprivalis*, Walk., = *M. maorialis*, Feld.), which might be confused with it, is fairly common; but its larva, like those of the other allied species of the group, feeds solely on *Leguminosæ*, and rarely on any but *Sophora tetraptera*, which is a small tree, one of the very few indigenous *Leguminosæ* of New Zealand. It certainly would not eat corn nor tussock grass; it is incredible that such could be the case without my having heard of it. Ashburton is in the district of Christchurch, where Mr. R. W. Fereday has resided and collected diligently for thirty years without having observed any such phenomenon.

(3). There is a moth whose larva is sometimes very destructive to corn and various other crops in the way described, and is often very abundant in New Zealand as in many other parts of the world; this is the well-known *Heliothis armigera*, Hb. When we remember that specimens of this insect have often reddish-brown fore-wings, and yellowish tinged hind-wings with a dark posterior band, we shall probably conclude that Mr. W. W. Smith has been misled by a very slight superficial resemblance into confounding two totally different insects. Mr. Fereday has told me how much the introduction of the sparrow has contributed to diminish the numbers of this *Heliothis*, which formerly used to consume all the peas in his garden, but is now quite uncommon there in most seasons.

(4). Touching the flax industry, if it increases, flax grounds will increase also; only drainage and corn-growing would interfere with them. But very few *Lepidoptera* (I know only of two or three at most) are confined to these grounds, and I cannot but think that the "many of our finest species," which Mr. Smith expects to become extinct in them, exist only in a fertile imagination.—E. Meyrick, Ramsbury, Hungerford: *February* 14*th*, 1890.

Nepticula pyri: a species new to Britain—From a few pear mines collected at the end of September, 1888, I bred the following June two little moths, which, Mr. Stainton tells me, are this species. For several years I had been familiar with the mines, but could never find them in quantity sufficient to give much chance of breeding the insect. They are besides of limited distribution in our orchards, and are present only where these are situated on the limestone or on the brashy cornstones of the Old Red, whilst they appear to be quite absent from the deep clays, which form the greater part of Herefordshire. Briefly described—the inner two-thirds of fore-wing is fuscous, with a golden-brown gloss, the outer one-third purple; junction of the two being pretty sharply defined, and concave in outline from the purple extending up both margins, but especially the costal one; head red. The egg is laid indifferently upon either the upper or the under-side of the leaf. The larva and mine are hardly to be distinguished from those of *oxyacanthella*.—J. H. Wood, Tarrington, Ledbury: *February* 7*th*, 1890.

Scoparia basistrigalis as distinct from S. ambigualis.—Mr. Tutt's note on *Scoparia basistrigalis* in the current number of the Ent. Mo. Mag. (xxvi, p. 51), confirms a suspicion I have long held—that many of the supposed *S. basistrigalis* in collections are not that species at all, but merely forms of *S. ambigualis*. The true *basistrigalis* is so local, and apparently also so erratic in appearance, that Mr. Tutt's statement to the effect that he has both so-called species in his cabinet from almost every *locality* he has worked, is, I venture to say, at variance with the experience of most

Lepidopterists. If Mr. Tutt, or any of your other correspondents, who doubt the distinctness of *basistrigalis* from *ambigualis*, had seen the former in the numbers I and several other Lepidopterists saw it in Edlington Wood, near Doncaster, on August 4th, 1879, I fancy their doubts would have for ever been dissipated. That year it occurred in profusion in one part of the Wood (opposite and around the Wood House), and a dozen or so were sometimes seen on a single tree trunk. I remember distinctly that on seeing the first specimen on that occasion, although I had never seen the insect alive before, I at once recognised it as *basistrigalis*; and on calling to the late William Prest, of York, who was working some distance from me, on coming up and seeing the specimen on the tree, he instantly said "*Basistrigalis!*" Some hundreds must have been taken that day, and hundreds more were left; and I know others went and obtained the species freely afterwards, so there must be plenty of these specimens scattered in different collections in the country. The following year hardly any were seen, and although I went specially for it several following seasons, I do not remember that I ever saw another specimen. Mr. Prest had also found it not uncommonly one season some years previously at Bishop's Wood, near Selby, but it now seems to be completely lost from both localities. It is a much larger insect than *ambigualis*, as nearly as possible, indeed, as big as *S. cembræ*, whilst it is a considerably broader and rounder winged insect than either of these species. The markings of some strongly marked *ambigualis* no doubt approach very closely to *basistrigalis*, but these are exceptional, and the distinctly different shaped wings in *basistrigalis*, apart from its larger size, at once separate it. I have never seen *basistrigalis* except in Edlington Wood; and although I suppose I have seen thousands of *ambigualis* in all sorts of localities, I have never seen any I was even inclined to suspect *might be basistrigalis*.—Geo. T. Porritt, Huddersfield: *February* 13*th*, 1890.

Identity of Dianthœcia carpophaga and D. capsophila.—In 1884, I obtained a number of *Dianthœcia* larvæ on the sea-coast near Tenby, in Pembrokeshire. Many of the resulting imagos have proved of great interest, and, I think, determine the identity of the species *Dianthœcia carpophaga*, Bork., and *D. capsophila*, Dup.

The larvæ were taken in the flowers of *Silene maritima* in the first fortnight of September. To look for them it is necessary to examine flowers of which the corollas have fallen or faded; if they are viewed from above, the larvæ, when at all large, are readily seen coiled round the base of the ovary, usually with their anterior segments buried in it. After a little practice, large beds of *Silene* may be quickly examined.

The larvæ were kept in a wooden box, on the bottom of which was spread a layer of about an inch deep of the shale in which the *Silene* grows. They pupate in this, and are easily and quickly reared; all that is required is to carefully clean out the calyces whose contents are eaten, and throw in fresh ones. They keep fresh a long time, and give no difficulty by drying up. I had between eighty and ninety larvæ, some of which had not pupated by the 7th of October; so the *Dianthœciæ* appear to have been double-brooded on this occasion. The larvæ belonged apparently to three species, but I did not attempt to keep them separately.

All the moths emerged in June, 1885; I had few cripples and no ichneumons.

The species bred were:—*Dianthœcia capsincola*, Hb., fourteen specimens of the normal type; *D. conspersa*, Esp., three specimens, rather dark, but not markedly so; *D. luteago*, var. *Barrettii*, Db., one specimen; this is, I think, the first record from the mainland of Great Britain.

The remaining seventy specimens consisted of insects which can be arranged in an uninterrupted series from the ordinary dark forms of *D. carpophaga* down to *D. capsophila*. I think they settle the vexed question of the continuity of these two forms; and I, therefore, propose to include the two species under the name *Dianthœcia carpophaga*, Bork., and var., *capsophila*. *Dianthœcia carpophaga* is thus remarkable as possessing, between the Irish var. *capsophila*, and the var. *ochracea*, Haw., of the south-east of England, a colour-range according with geographical distribution, which is not excelled, or, perhaps, equalled by any other species within the limits of the United Kingdom.—W. F. H. Blandford, 48, Wimpole Street: *February 9th*, 1890.

[Mr. Blandford has entrusted the *Dianthœciæ* in question to me for examination. I certainly think that the fact is now established—that *capsophila* is only a local form of *carpophaga*. Those of the series in question belonging to the latter are all browner than the types, and tend darker, while the *capsophila* become browner, so that, although the two varieties can undoubtedly be separated with ease, even in this series, there remains no distinguishing specific character—nothing but a shade of colour, the markings being absolutely identical. In admitting this, I am compelled to throw away the belief fondly cherished ever since the time—30 years ago—when the earliest Irish *capsophila* were taken on the Hill of Howth. The other striking species then taken, and for many years called by my name, has, so far as the variety is concerned, hitherto remained exclusively Irish. The single specimen now reared by Mr. Blandford from the southern coast of Wales differs in some degree from all the Irish specimens that I have seen, but does not in any way form a link with the continental typical *luteago*.—Chas. G. Barrett.]

Drepanopteryx phalænoides, L., in Durham.—On examining the contents of my umbrella while beating the alder trees late in October, 1885, I found I had got an insect which I had never seen before. At first sight I thought I had got a new "hook tip." When it dropped into the umbrella it lay quite still, feigning death. On examining it I saw it was a Neuropterous insect, which, on enquiry, turned out to be *Drepanopteryx phalænoides*, an insect rare in this country. I took it from an alder overhanging the Waskerley Burn, about two miles from this place.—Amos Mitchell, Wolsingham, Durham: *February 12th*, 1890.

[Mr. J. Gardner, of Hartlepool, was so kind as to first give me the information that enabled me to obtain the above particulars. He adds that Wolsingham, in Weardale, is only about 14 miles "as the crow flies" from Deepdale, in Teesdale, where Miss Hutchinson took her specimen.—R. McLachlan].

A correction.—In my article on the metamorphoses of *Tinodes*, published in the February No., there is a slight error in referring to the figures. The sentence commencing at line 11 on p. 40 should read as follows:—"Mandibles *in situ* irregular in outline; *left* seen from above has two teeth below the apex on the upper edge and three on the lower; between the two edges is a fringe of hairs; in the *right* the teeth, &c."—*K. J.* Morton, Carluke, N.B.; *February*, 1890.

Reviews.

ENTOMOLOGICAL NEWS, and Proceedings of the Entomological Section of the Academy of Natural Sciences of Philadelphia. Vol. i, No. i, January, 1890. Edited by Eugene M. Aaron.

Under this title, the American Entomological Society (affiliated to the Academy) propose to issue a Journal of 10 Nos. each year (not less than 160 pp. in all), at a very cheap rate. We have seen the first No., and if continued on and developed from the standpoint taken up, it cannot fail to be useful. We wish it all success. The European agents are Trübner & Co., for this country, and Friedländer & Sohn, for Germany.

MONOGRAPH OF THE BRITISH CICADÆ OR TETTIGIIDÆ, with more than four hundred coloured drawings: by GEORGE BOWDLER BUCKTON, F.R.S., &c., 8vo, Part i, January, 1890. London: Macmillan & Co.

We prefer to reserve any further notice of this work until its completion in eight quarterly parts. The first part contains 32 pages of letter-press and 12 plates, two of structural details, plain, and ten of figures of perfect insects, enlarged and coloured. The first 16 pages are almost entirely of literary interest, the remainder consists of generic and specific descriptions. But there are no indications of the systematic or structural characters of the group as a whole, which we presume are left for the concluding part; yet it is to be regretted that in writing of insects of such definite structural peculiarities, an introductory notice of them has not been given. The 10 plates contain enlarged figures of the insects, rendered by chromo-lithography from the author's camera-lucida drawings on the stones; in execution and finish they are excellent, and will prove to many persons to be a revelation of beautiful and interesting forms, hitherto unsuspected and unnoticed. Thus, we hope that the British *Cicadæ* will, with this aid to their identification, receive more attention, and, as there are doubtless many more species to be found, that in the coming time others will be added to our fauna.

Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: *January 20th*, 1890.—Mr. W. G. BLATCH, President, in the Chair.

The Rev. Chas. F. Thornewill exhibited *Acidalia immorata*, he also showed *Noctua festiva*, var. *conflua*, from Scotland. Mr. C. J. Wainwright showed *Cabera rotundaria* from Sutton Park. Mr. H. Tunaley read a paper on the Entomology of Porlock, in Somersetshire, and its neighbourhood, giving a good description of the place, and a list of the *Lepidoptera* taken, which included many good species; the paper was illustrated by the insects themselves.

February 3rd, 1890.—FIRST ANNUAL MEETING.—The President in the Chair.

The Secretary read the report of the Council for the past year: it was very satisfactory, the number of members, already 30, was still increasing, and good work was being done. The Treasurer, Mr. R. C. Bradley, read the financial statement, which showed a balance in hand. Votes of thanks were given to the retiring Officers and Council, and the following were elected for the ensuing year: Mr. W. G. Blatch, as President; Rev. Chas. F. Thornewill, as Vice-President; Mr. R. C. Bradley, as Treasurer; Mr. C. J. Wainwright, as Secretary; and as remaining Members of Council, Messrs. W. E. Lee and E. C. Tye. Handsome donations to the library were announced from Messrs. C. B. and A. B. Halinsworth, and duly acknowledged.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

N.B.—This Society meets on the first and third Monday in each month, at the Medical Institute, Edmund Street, Birmingham, and all Entomologists will be welcomed.

Entomological Society of London: *February 5th*, 1890.—The Right Hon. Lord Walsingham, M.A., F.R.S., President, in the Chair.

Mr. B. A. Bristowe, of Champion Hill, S.E.; Mr. J. E. Eastwood, of Witley, Surrey; Mr. Albert B. Farn, of Stone, Greenhithe, Kent; and Mr. O. Goldthwaite, of Leyton, Essex, were elected Fellows.

Mr. F. D. Godman exhibited a specimen of *Papilio Thoas*, from Alamos, in the State of Gonora, Mexico, showing an aberration in the left hind-wing. Mr. R. Trimen remarked that butterflies of the genus *Papilio* were seldom liable to variation.

Mr. Charles G. Barrett exhibited a series of specimens of *Phycis subornatella*, Dup., from Pembroke, the east and west of Ireland, the Isle of Man, and Perthshire; and a series of *Phycis adornatella*, Tr., from Box Hill, Folkestone, Norfolk, and Reading; also a number of forms intermediate between the above, taken in the Isle of Portland by Mr. N. M. Richardson. He said that these forms proved the identity of the two supposed species, which he believed were both referable to *P. dilutella*, Hb. He also exhibited specimens of *Hesperia lineola*, and a pale variety of it taken in Cambridgeshire by Mr. H. W. Vivian; specimens of *Epischnia Bankesiella*, a recently-described species, taken by Mr. N. M. Richardson, in Portland; and a specimen of *Retinia margarotana*, H.-S., a species new to Britain, discovered in Mr. Hodgkinson's collection amongst a number of *Retinia pinivorana* which had been collected in Scotland.

Mr. W. H. B. Fletcher showed a series of *Gelechia fumatella* from sandhills in Hayling Island and near Littlehampton, and, for comparison, a series of *G. distinctella*, from the same place. He also showed a few bred specimens of *G. terrella*, and a series of preserved larvæ. He stated that on the downs the larvæ live in the middle of the tufts of such grasses as *Festuca ovina* and allied species, and that on sand-hills, where herbage is more sparse, they make silken galleries under stones, and sally forth to eat blades of grass growing near their homes.

Mr. H. Goss read a communication from Dr. Clemow, of Cronstadt, St. Petersburg, on the subject of the coincidence of vast flights and blights of insects during the years 1757, 1763, 1782, 1783, 1836 and 1847, and the epidemic of influenza. During the year 1889, no unusual activity in the insect world had been recorded. Mr. H. T. Stainton and Mr. McLachlan made some remarks on the subject, the purport of which was that there was no connection between epidemics and the occurrence of swarms of insects, and this appeared to be the general opinion of the meeting.

Mr. G. A. J. Rothney communicated "Notes on Flowers avoided by Bees." It appeared, according to the author's observations, made in India, that dahlias were exceptionally attractive, but that the passion-flower was only resorted to by a few species of *Xylocopa*: and that, with one exception, he had never seen any insects feeding on the flowers of the oleander. Mr. Slater, Colonel Swinhoe, Mr. Trimen, Lord Walsingham, and Mr. McLachlan took part in the discussion which ensued.

Dr. D. Sharp read a paper, entitled, "On the structure of the Terminal Segment in some male Hemiptera."

Colonel Swinhoe read a paper, entitled, "On the Moths of Burma." This paper contained descriptions of several new genera, and 107 new species.

Dr. F. A. Dixey read a paper, entitled, "On the Phylogenetic Significance of the wing-markings in certain genera of the *Nymphalidæ*." A long discussion ensued, in which Lord Walsingham, Mr. Jenner Weir, Mr. Elwes, Mr. Trimen and *others took part.*—H. Goss, *Hon. Sec.*

A NEW SPECIES OF *NEURAPHES.*

BY W. G. BLATCH.

NEURAPHES PLANIFRONS, *sp. n.*

Head and thorax rufo-testaceous, elytra more or less pitchy-testaceous. Palpi flavous. Antennæ reddish-yellow, with first joint pitchy at apex. Legs reddish-yellow, tarsi flavous.

Head large, and (with the eyes) as wide as the thorax, vertex very broad, flat, and smooth. Eyes prominent. Antennæ with first joint stout and rather long; second joint as long as first, but thinner; third, fourth, and fifth, each rather longer than broad; sixth about as broad as long; seventh larger than the four preceding, its width and breadth about equal; next three joints larger, gradually increasing in size, strongly transverse, and forming with the terminal joint (which is about twice the length of the tenth, and bluntly acuminate) a distinct club.

Thorax longer than broad, convex, strongly deflexed, and rounded at anterior angles, bordered from base to beyond middle, where it is broadest; basal angles slightly acute; base with four faint foveæ, one near each side margin, and one on each side of a slight carina in centre, all of them at some distance from the basal margin, and connected by a very faint, almost obsolete, line.

Elytra rather broad, oval, convex, shoulders raised, the base with four foveæ, the outer pair shallow, the inner pair deep, and filled with tufts of yellow hairs.

All the femora are strongly clavate.

The whole of the body, on its upper surface, is covered with long yellow bristles, which are more or less decumbent on the head and thorax, and sub-erect on the elytra. The punctuation is entirely setigerous, but is distinct and even coarse on the elytra. Length, 1 mm.

I have found this beetle only in Sherwood Forest, under bark of birch stumps, in company with *Scydmænus Godarti* and *S. exilis.* My specimens were taken in May, 1884, September, 1885, and June, 1889.

This species seems to come nearest to *N. Sparshalli,* from which it may easily be distinguished by the broad flat vertex of its head, its more prominent eyes, the longer joints of the antennæ, the stronger and more erect bristles on the elytra, and the more perfectly oval form of the latter. The vertex of the head in *N. Sparshalli* is narrow, and always more or less depressed—an effect, perhaps, of the strongly raised ocular margins. The thorax, too, is widest near the apex, and the middle foveæ at the base are much closer to the outer ones than to each other, the line connecting them is distinct, and there is no trace of a central keel. The legs also are darker than in *N. planifrons,* and the inner foveæ at the base of the elytra appear to be without the tufts of hairs. The antennæ are less distinctly clavate.

In this connection, I have examined a specimen given to me by Dr. Power as *Scyd. pumilio,* which seems to me to be only a small form of *N. Sparshalli.*

214, Green Lane, Smallheath,
Birmingham: *March,* 1890.

SYNOPSIS OF THE BRITISH *ORTHOPTERA.*

BY ELAND SHAW, F.E.S.

(*Continued from page* 64).

vii.—PLATYCLEIS, Fieber.

Platycleis differs from *Thamnotrizon* chiefly in having the organs of flight more or less developed, never squamæform; and the tooth on the internal border of the cerci in ♂ is nearer the apex than the base. The following remarks on the genus will save repetition in the descriptions of the species.

Head with the vertex broad and rounded, ocellus scarcely visible. Antennæ longer than the body, with the first joint broad and compressed. Pronotum above flattish, with a more or less distinct median longitudinal ridge; side lobes inserted at a blunt angle. Prosternum unarmed. Elytra perfectly developed or abbreviated, never squmæform. Wings hyaline. All the femora unarmed below. Anterior tibiæ with three spines above. Posterior tibiæ with four apical spines below; first joint of the posterior tarsi with free plantules. Anal segment in ♂ sulcate. Cerci in ♂ conical, with a tooth about the middle or nearer to the apex. Subgenital lamina in ♀ sulcate or ridged longitudinally, with the lobes rounded or acuminate. Ovipositor incurved, acuminate.

TABLE OF SPECIES.

1 (2) Subgenital lamina in ♀ longitudinally sulcate; elytra and wings fully developed ....1. *grisea*, Fabr.
2 (1) Subgenital lamina in ♀ longitudinally ridged; elytra and wings abbreviated.
3 (4) Ovipositor regularly incurved; twice as long as the pronotum; side flaps of the pronotum with a pale margin posteriorly ...2. *brachyptera*, Linné.
4 (3) Ovipositor sharply incurved near the base; not more than half as long again as the pronotum; side flaps of the pronotum with a pale margin nearly all round ....3. *Roeselii*, Hagenb.

1.—PLATYCLEIS GRISEA, Fabr.

Locusta grisea, Fabricius, Ent. Syst., ii, p. 41.

Decticus griseus, Serv., Orth., p. 488.

Dec. (*Platycleis*) *griseus*, Fischer, Orth. Eur., p. 269, tab. xiii, figs. 3, 3*a*—*d*.

Platycleis griseus, Brunner, Prod. der Eur. Orth., p. 347.

General colour greyish-fuscous. Head with the frons almost covered by reddish-fuscous markings, vertex with two blackish spots (sometimes obsolete). Pronotum with the disc subdepressed, median ridge showing posteriorly. Elytra and wings fully developed; elytra with several fuscous spots, wings hyaline, somewhat smoky at the apex, green towards the base. Posterior femora with a fuscous streak on either side near the base. Anal segment in ♂ deeply sulcate posteriorly in the middle, lobes acuminate. Cerci conical, with a tooth about the junction of the middle and lower thirds. Subgenital lamina in ♀ longitudinally sulcate, lobes not produced far, triangularly rounded. Ovipositor incurved from the base.

Length of the body, 17—23 mm.
„ „ ovipositor, 9—10 mm.

This species is widely distributed in Europe, and here I know of its occurrence in many localities along the south coast. It was common at Charmouth, Dorset, in September, 1887, and in the Land's End district in September, 1889. Mr. Porritt found it "common" at Deal and Folkestone, and also took it in the Isle of Wight.

2.—PLATYCLEIS BRACHYPTERA, Linné.

Gryllus (Tettigonia) brachypterus, Linné, Faun. Suec., p. 237.

Micropteryx brachyptera, Stephens, Mandib., vi, p. 13.

Decticus (Platycleis) brachypterus, Fischer, Orth. Eur., p. 277, tab. xiii, figs. 10, 10*a*—*b*.

Platycleis brachyptera, Fieber, Synopsis, p. 43; Brunner, Prod. der Eur. Orth., p. 356.

Generally dark brown, with green and dark markings. Head with the frons reddish-fuscous, vertex and occiput pale in the middle, sometimes forming a pale broad streak continued to the posterior margin of the disc of the pronotum; above the eyes is a pitchy streak. Pronotum flat, with the median ridge marked in the posterior part, dark green, side lobes mottled with dark fuscous; margins paler, the posterior margin more broadly pale. Elytra and wings abbreviated, not so long as the abdomen. Elytra subacuminate, anterior and posterior parts green, between them more or less fuscous. All the femora with numerous blackish dots; anterior and middle femora with a black streak near the knee on the posterior aspect; posterior femora greenish beneath, with a black streak on either side near the base. Abdomen with dark lateral streaks, yellowish below. Anal segment in ♂ excavated posteriorly, with the lobes somewhat acuminate. Cerci in ♂ not protruding beyond the subgenital lamina, dentate about the middle. Subgenital lamina in ♂ with a small, central, triangular notch posteriorly, greenish in the middle, with a pitchy streak on either side. Subgenital lamina in ♀ long, with a small, central, triangular notch in the posterior margin. Ovipositor regularly incurved, twice as long as the pronotum.

A variety with much longer elytra and wings, which is found on the continent, has yet to be recorded as British.

Length of the body, 12—16 mm.
„ „ ovipositor, 8—10 mm.

"On heathy ground and damp wood meadows from Lapland to the Alps, and easterly as far as the Ural" (Brunner von Wattenwyl). I found it fairly common at Bournemouth on the top of the West Cliff, in September, 1887, and the late Mr. Kemp-Welch and Mr. H. Winston have taken it in the same locality. Mr. Porritt tells me he has found it on Strensal Common, York.

3.—Platycleis Roeselii, Hagenbach.

Locusta Roeselii, Hagenbach, Symb. faun. ins. Helv., i, p. 39, fig. 24.
Micropteryx Roeselii, Stephens, Mandib., vi, p. 13.
Platycleis Roeselii, Brunner, Prod. der Eur. Orth., p. 358.
Lo. brevipennis, Charp., Horæ Ent., p. 114.
Decticus (*Platycleis*) *brevipennis*, Fischer, Orth. Eur., p. 274, tab. xiii, figs. 9, 9*a*—*b*.

Head with the frons pale fuscous. Vertex very broad, with a central longitudinal pale line, on either side of which is a blackish streak, not continued as far forward as the cross furrows between the vertex and frons; the two blackish streaks sometimes uniting anteriorly, with a blackish streak over the eyes. Pronotum with the disc broad, as wide anteriorly as posteriorly, flat, with an obsolete median ridge, side lobes roundly inserted, mottled with fuscous, with the margin sulphureous or greenish, most marked posteriorly and inferiorly, but running also along the anterior margin. Elytra and wings not so long as the abdomen. Elytra ferruginous, with blackish veins, not acuminate towards the apex, posterior margin not so sinuate as in *P. brachyptera*, L. All the femora fusco-ferruginous, with a few darker markings; posterior femora with a broad black streak near the base on the outer side. Abdomen ferruginous. Anal segment in ♂ excavated posteriorly, lobes triangularly produced. Cerci in ♂ reaching well beyond the subgenital lamina, with an internal tooth about the junction of the middle and posterior thirds. Subgenital lamina in ♂ broadly incised; in ♀ long, deeply incised, with long triangular lobes. Ovipositor sharply incurven near the base, not more than half as long again as the pronotum. Length of the body, 14—18 mm.
„ „ ovipositor, 7—8 mm.

This species is found in Northern and Central Europe, and occurs in damp meadows. Mr. E. Saunders took one at Herne Bay in August, 1886, and Mr. Wallis Kew has given me specimens from Trusthorpe in Lincolnshire, August, 1888. Stephens says (Mandib., vi, 13) that he had only seen two British specimens, supposed to have been taken near Hampstead.

viii.—DECTICUS, Serv.

The peculiar characters of this genus have already been referred to under the last three genera. The species (*verrucivorus*, L.) may be at once distinguished by its large size from all the other British *Locustidæ*, except *Lo. viridissima*, and from this species its spotted elytra afford an easy means of separating it.

1.—Decticus verrucivorus, Linné.

Gryllus (*Tettigonia*) *verrucivorus*, Linné, Faun. Suec., p. 237; Syst. *Nat., i, p.* 698.

Decticus verrucivorus, Stephens, Mandib., vi, p. 17; Fischer, Orth. Eur., p. 280, tab. xiii, figs. 2, 2*a*—*m*; Brunner, Prod. der Eur. Orth., p. 363, fig. 89.

Acrida Binglei, Curtis, Brit. Ent., ii, pl. 82.

Dec. Binglei, Stephens, Mandib., vi, p. 17.

Colour variable, deep green, olivaceous, or testaceous, with fuscous markings. Head with the vertex broad, rounded, separated from the frons by a sulcus broader than the first joint of the antennæ; frons green or reddish-fuscous; antennæ about as long as the body, Pronotum above flat, with three longitudinal ridges, side lobes inserted at an angle, green, with a testaceous central blotch, or wholly testaceous. Elytra longer than the abdomen, with several blackish spots, the most distinct being a row of large, mostly square, spots between the posterior radial and ulnar veins. Wings hyaline. Anterior femora very short; posterior femora long, much thickened at the base, with a few indistinct fuscous markings. Anterior tibiæ above in the external margin with a row of four spines; posterior tibiæ with four apical spines beneath; posterior tarsi with the free plantules not so long as the proximal tarsal joint. Abdomen above testaceous or olivaceous, the segments with paler margins and lateral dark dots, below olivaceous or fusco-testaceous. Anal segment in ♂ deeply excavated with pointed lobes. Cerci in ♂ dentate about the middle. Subgenital lamina on either side with a fuscous streak; subgenital lamina in ♀ triangular, incised posteriorly with pointed lobes. Ovipositor nearly straight, somewhat incurved towards the apex, where there are some small crenulations.

Length of the body, 26—42 mm.
„ „ ovipositor, 17—25 mm.

Stephens (Mandib., vi, 17) records this species as having been once taken near Rochester, and the specimens from which Mr. Curtis (*l. c.*) described his *Acrida Binglei* were from Christchurch, and were evidently of the brown form. There seem to have been no other records of its occurrence until my friend, Mr. H. C. Phillips, took two green female specimens on the cliff near St. Margaret's Bay in August, 1886 (*vide* Trans. Ent. Soc., 1886, p. liii). This species occurs all over Europe, also in Siberia and the Amur district.

REPUTED SPECIES.

Ephippigera virescens, Steph., Mandib., vi, p. 11, = *Leptophyes punctatissima*, Bosc., q. v.

Xiphidion fusca (Curtis), Steph., Mandib., vi, p. 14, = *Xiphidium dorsale*, Latr., q. v.

Acrida Binglei, Curtis, Brit. Ent., ii, pl. 82, = *Decticus verrucivorus*, L., brown form.

Micropteryx aptera (? Turton), Steph., Mandib., vi, p. 12, = *Thamnotrizon cinereus*, L., q. v.

Locusta clypeata, Panzer, Faun., Ins. Germ., fasc. 33, pl. 4 (*Acrida*), Curtis, Brit. Ent., ii, pl. 82, = *Thamnotrizon cinereus*, L., q. v.

(*To be continued.*)

THE GENUS *SCOPARIA.*

BY EUSTACE R. BANKES, M.A., F.E.S.

It is, indeed, surprising that Mr. C. A. Briggs should apparently now claim, in Ent. Mo. Mag., i, p. 50, to have so satisfactorily settled in 1885, the question as to the specific identity of *S. ambigualis* and *atomalis!* For, although on *April 22nd*, 1885, he wrote ("Entomologist," xviii, p. 130), "yet *intermediate specimens* of every possible degree of gradation *are familiar to us all*," and now remarks that "any one seeing these intermediate specimens must, I think, *be driven to the same conclusion as to their identity*," yet, in "Entomologist," xxii, p. 16, *under date December 10th*, 1888, we find the following from his pen: "Will none of my brother Entomologists in Scotland *assist me in working out the question of the specific identity of S. ambigualis and atomalis?* Convinced as I am of their identity, *I cannot satisfactorily prove it from lack of material.* * * and if Entomologists working near the junction of the Highlands and Lowlands *would but collect these species for comparison, the matter would speedily be settled.* (N.B.—The italics throughout are mine.) However, I would ask your readers to refer, as I have just done, to the papers to which he alludes, contributed by Mr. Briggs to the "Entomologist." Mr. Briggs cannot for one moment suppose that, while using such expressions as "vexed question" and "as has for some time past seemed probable," I, any more than he himself, had the slightest thought of claiming any originality in the view that *ambigualis* and *atomalis* might be identical; but, having at last the welcome chance of examining a nice variable series from different parts of Perthshire, and knowing that some Entomologists, to whom intermediate specimens were by no means "familiar," were still not disposed to accept the idea, I penned my few notes on the matter in the hope that possibly my independent testimony might be useful to those who had also suffered from "lack of material."

With reference to the second paragraph (p. 51) of Mr. Briggs' note, it would surely have been strange if, when writing with my own revised sketch of the genus before me, I had not briefly alluded to the difficulties which, partly by individual effort, and partly by common consent, have been recently cleared away.

As regards the question of *S. mercurella* and *cratægella*, I have, in order to oblige Mr. Briggs, made the following attempt to tabulate the chief distinctions between the two species, but owing to the *unparalleled range* of variation, both in colour and markings, in the former, it is almost impossible to employ language which is equally applicable to every variety, and it must be self-evident that the differences pointed out become intensified or modified as the opposite extremes of variation are approached. In every instance, however, I believe that several of the points will be found to hold good, and will, I hope, lead to a correct conclusion, even in the determination of the few individuals which may at first sight appear to be intermediate between these species. I should very much like to see the Irish specimens mentioned by Mr. Briggs as being equally referable to either species. To any one who has once become thoroughly familiar with the appearance of *cratægella*, when in fine condition, it must surely seem almost beyond dispute that it is an "abundantly distinct" species, and by far the quickest and easiest way of separating it out of a mixed series is by the *eye* alone, a single glance being generally quite sufficient for the purpose.

My series of *mercurella* consists of some seventy specimens, picked out from the many hundreds which I have taken or bred, and set, of late years, and shows a marvellous range of variation from the very whitest var. *portlandica* down to the very darkest var. *concinnella*. *Cratægella*, however, seems to be rather scarce in this part of the country, and during the same period I have not captured ten specimens altogether; as it is but poorly represented in my own cabinet, I have had to depend largely on the kindness of friends for the loan of examples for my present purpose. In so far as I have seen it in collections, or can ascertain, though variable, it does not present any *extreme* varieties. It is very widely distributed; but I remember the late Mr. Sang telling me that *cratægella* was the commoner species in the *north* of England, whilst he believed *mercurella* to be the more plentiful in the *south*; and this is certainly the case, in so far as this county, the Worthing district, and the localities worked by Mr. J. W. Tutt, are concerned.

Apart from every other consideration, *cratægella* could not by any possibility be, as suggested by Mr. Briggs, a "local *chalk* variety" of anything, as it seems to occur on every sort of formation, and my few captures have all been made *on the stiffest clay!*

After a very careful and critical examination, the following seem to me to be the most trustworthy distinctions between the two species:—

1. *Cratægella* is altogether a prettier and cleaner-looking insect, the markings being much neater, and standing out more prominently owing to their not being so much obscured by dark clouding. The prevailing colour of the fore-wings varies from pale grey to dark grey, while in *mercurella* it ranges from pure spotless white

down to very dark warm brown; in both there is often a strongly ochreous tinge, but in the darker forms of the latter the colour is generally *brown* or *ochreous-brown*, as opposed to the *grey* or *ochreous-grey* of the former. The variation in colour is shown in both sexes.

2. The basal area (exclusive of the extreme base, which is in both species often of a different colour) in *cratægella* is either of the same shade as, or most frequently darker than, the medial area, whereas in its ally the basal area is almost invariably, to a greater or less extent, rather the lighter of the two.

3. In *cratægella* the medial area is *never conspicuously darker* than the rest of the wing, as is often so noticeably the case in *mercurella*, owing to the presence of a darker cloud along the outer edge of the first line and towards the costa. In dark examples of the former, there are sometimes indications of this dark clouding, but, even then, owing to the still deeper shade of the rest of the wing, its presence does not render the medial area conspicuously dark.

4. Owing to the usual absence of this clouding in *cratægella*, the orbicular and claviform stigmata are, as a rule, much more distinct than in the allied species, in which they are frequently much obscured. In *cratægella* the claviform stigma often takes the shape of a black dot placed at a little distance from the first line, extremely rarely, if ever, touching it; but in *mercurella* it is usually dash-shaped, and touches the first line.

No reliance, however, can be placed on these two stigmata as a permanent basis of tabulation for the genus, as is done by Dr. Guard Knaggs in the Ent. Mo. Mag., v, p. 291. In both the species under consideration they undoubtedly vary to a certain extent in shape, and *consequently* in relative position as regards the first line.

5. *Cratægella* has the 8 mark small, and outlined by a narrow and clearly-defined dark line; the upper half is generally filled in with the palest shade of the ground colour, and stands out clearly as a *neat, round, eye-like spot*. In *mercurella*, however, the 8 mark is, as a rule, larger, and situated nearer the second line; it is by no means so clearly outlined, and the upper half is usually filled in with a darker shade than the ground-colour. It consequently *never* presents to the same degree the neat and striking eye-like appearance.

6. In *cratægella* the second line is very dark and clearly defined, both on its outer and inner edge; it is distinctly marked right across the wing from the costa to the inner margin. In *mercurella*, on the other hand, there is sometimes in the darker forms no real second line, but simply an abrupt termination of the dark medial area; when a genuine line appears, it is not relatively so dark or so clearly defined, *particularly on its inner edge*, and, while strongest on the costa, is apt to fade away, or become much less distinct towards the inner margin.

7. In both species the second line is followed by a distinctly pale line, but in *cratægella* this is *always decidedly narrower* than in *mercurella*, and is *never relatively so pale* in comparison with the general shade of the wing; in the latter it often forms, more properly speaking, a band, which reaches its extreme breadth in the whitest var., *portlandica*.

8. The distinction, noticed by Mr. Stainton in the "Manual," ii, p. 162, that in *cratægella* the upper half of the sub-terminal band unites with the dark wedge-shaped mark on the hind-margin, whilst in *mercurella* it is not so united, holds good *in the great* majority of cases, though it cannot be altogether relied upon.

9. The whole arrangement of colour and disposition of markings tend to produce *an exactly opposite effect* in the appearances of the two insects. In *cratægella* there is a constant tendency towards the comparative *paleness of the medial area* being rendered strikingly conspicuous by *the darker colouring* of the basal area and subterminal band; whereas, in *mercurella*, the strong tendency is towards the *darkness of the medial area* being brought into prominence by the relatively *lighter colouring* of the areas on either side of it.

I have but little doubt that the larva of *cratægella* would afford additional points of contrast to that of the nearly-allied *mercurella*, and I would, in conclusion, earnestly beg some kind friend, living in a locality where the former is plentiful, to give us his assistance in the matter by forwarding living larvæ to Mr. G. T. Porritt, of Huddersfield, to be compared side by side with those of the latter.

The Rectory, Corfe Castle :
March 5th, 1890.

A NEW BRITISH BEE—*PROSOPIS GENALIS*, THOMS.

BY EDWARD SAUNDERS, F.L.S.

I am glad to be able to add this species to our list, although it is so closely allied to *confusa*, Nyl., that it requires very careful examination to distinguish it from that insect. My attention was called to it by Mons. Dachal, of Argentat, who sent me specimens of *genalis*, Thoms., from his locality, pointing out how closely allied it was to *confusa*, Nyl. I accordingly examined my specimens carefully, and found 1 ♂ and 2 ♀ of *genalis*, Thoms., taken at St. Leonard's, all in the same locality. I have little doubt that it is mixed in other collections with true *confusa*, Nyl. The following differences will serve to distinguish the species:—

PROSOPIS GENALIS, Thoms., Hymn. Scand., ii, p. 124.
= *Hylœus confusus*, Foerst., Verh. zool.-bot. Wien, 1871, p. 95 (*nec* Nylander).

Differs from *confusus*, Nyl., in having the face rather longer, the cheeks between the eyes and mandibles distinctly so ; the ♂ has also the labrum white, whereas it is black in *confusus*, and the segments of the abdomen beneath simple, whereas in *confusus* the 3rd segment has a distinct central callosity, the apex of the 6th segment beneath is also more truncate than in *confusus*. In the 7th and 8th segments the characters are not very pronounced, but the transverse basal portion of the 7th is narrower, and the hairs on the apical portion longer and apparently more numerous. The apex of the 8th is more widely truncate, in the armature itself I can see no special characteristic. The differences in the ♀ are the longer cheeks, the larger and more triangularly shaped spots on the face between the eyes, and the slightly, although almost microscopically, more roughened surface of the basal segment of the abdomen.

My specimens are all three slightly larger than those I have of *confusus*.

Three specimens on bramble flowers in August, Hollington Wood, near St. Leonard's.

St. Ann's, Woking, Surrey:
March, 1890.

THE LARVA OF *SWAMMERDAMIA LUTAREA*.

BY J. H. WOOD, M.B.

In a paper on the *Swammerdamiæ*, in Ent. Mo. Mag., vol. xv, pp. 229—231, M. Ragonot, quoting von Nolcken, gives a short description of this larva, and mentions one of its food-plants. In the following volume, p. 163, the name again crops up: the late Mr. Sang recording the discovery of some strange looking larvæ on mountain-ash (*Pyrus aucuparia*), which he thought might be *S. lutarea.* But Mr. Stainton, to whom specimens were sent, was doubtful, as they did not agree with von Nolcken's description, and he seems rather to have been of opinion that they were *S. griseo-capitella*, notwithstanding their black heads and the curious food-plant. In this Mr. Stainton was, I think, quite right. I have myself found *griseo-capitella* on another species of *Pyrus*, viz., *torminalis*, showing that it is by no means restricted to birch; and I have also come across a melanic form of the larva, in which not only the head and plate, but also the whole body was black or greenish-black, the melanism persisting up to the last moult, when it was exchanged for the natural green colour

Von Nolcken says nothing about the larva before hibernation, and does not appear to have been acquainted with it at so early a stage, a gap which I am able in a great measure to fill up. I find the larvæ in the autumn, living from six to eight or more together under a web, low down among the leaves and twigs of bushes both of hawthorn and of mountain-ash. At the approach of winter, each makes for itself a rather large slender cocoon, white, and closely woven, in which it lies till it begins feeding again in the spring. I am doubtful about the age at which it hibernates in the natural state, but in confinement it seems to vary in this respect. In larvæ that were successfully reared last year, I counted two moults after hibernation, and had good reason for believing that they had moulted twice before hibernation, which would make the number of moults four, and hibernation to come in half-way. But of a small collection wintering at the present moment, some correspond with the above, and all in their third skin, whilst the rest appear to be a moult behind them.

The larva has the usual shape, with the opaque skin, and the rich and varied colours characteristic of so many of the genus.

When very young, the back and sides are yellow-brown, the spiracular region and under parts whitish-green; the dorsal line (a true skin mark) is a narrow thread rather darker than the ground-colour, and present only in the abdominal segments; sub-dorsal lines broad, and with ill-defined edges, dark yellow-brown; head greyish-brown, almost black at the sides, and armed with long pale hairs. By the time it is ready to hibernate, and when, as I estimate, it is in its third skin, the colours have become darker and warmer, and the pattern more complex. The dorsal area of the thoracic segments is now much irrorated with white on the fore part of the segments; the corresponding change on the abdominal segments is less complete, and is limited as yet to a pair of whitish spots at the divisions, followed in some cases for a short distance by a pale irroration; the white spiracular line also makes its appearance, and is a broad band on the thoracic segments, but on the abdominal ones it is as yet narrow, wavy, and interrupted in the middle of the segments; the under parts are mottled with brown. Sometimes, as I have already indicated, the changes are less advanced—the white spiracular line is present, but there is little trace of the white dorsal irrorations, and the under parts are without the darker mottling: the specimens, too, are considerably smaller, and evidently a moult behind the others. After hibernation, further changes take place, until with the last moult the full and very beautiful pattern is completed. The head of the full-grown larva is ochreous-brown, streaked at the sides with blackish-brown; the back in both thoracic and abdominal region is alternately white and orange, these colours occupying respectively the fore and hinder parts of the segments; the brilliantly white spiracular band extends from 2 to 12 inclusive, on its upper border is a large orange-spot in the middle of each abdominal segment (5—12); the narrow but conspicuous rich brown dorsal line is interrupted on the thoracic segments, but continuous on the abdominal ones; the broad sub-dorsal lines are also rich brown, with their edges still ill-defined; just inside them, and almost in a straight line, lie the small white dorsal spots; the under parts are dark brown.

For this description of the mature larva I depended upon larvæ collected early in September, and kept under observation till they went into pupa at the end of May. A full-grown specimen, taken at large on May 22nd, 1888, was so different, that it was described as a distinct variety, but, as it afterwards proved to be stung, it would, perhaps, be more correct to consider it an abnormality; yet none the less interesting, inasmuch as the peculiarity mainly took the form of an arrest of development, the pattern being little, if at all, in advance of that of the larva at the hibernating age.

Thus, the white dorsal marks were distinct on the thoracic segments, but represented on the abdominal by faint irrorations only; the white spiracular line was broad and continuous in the former region, but reduced in the latter to a large spot at the divisions. The colours besides were much modified, the healthy yellow-brown or orange ground being replaced by red, and the browns by red-browns.

Tarrington, Ledbury:
February 7th, 1890.

CARDIOPHORUS EQUISETI, HERBST, A SPECIES NEW TO BRITAIN.

BY W. F. H. BLANDFORD, M.A., F.E.S.

At the meeting of the Entomological Society of London in August, 1889, I showed, as *Cardiophorus cinereus*, Herbst, Er., two specimens of a *Cardiophorus* taken in South Wales. I received them freshly caught in a small collection made for me by Miss E. A. L. Daltry, who tells me that she took them in long grass on the cliff between Tenby and Manorbier on May 29th, 1889.

The black *Cardiophori* form a group of closely-allied forms, notorious for the confusion connected with them, and for the errors in synonymy which have prevailed.

Among them *C. asellus*, Er., is distinguished by having the tarsal claws simple, whereas, in *C. cinereus*, Hbst., Er., and *C. equiseti*, Hbst., Er., the most important and generally-confounded congeners, the claws are dentate on their concave margin, an important distinction, which serves as a starting point for differentiation in the genus.

My two specimens differed in the relative width of thorax and elytra, which, as in other species, I took to be a sexual character; but not feeling sure about my diagnosis, and, on further study of the European species, being unable to decide definitely as to which to refer them, I asked Mr. G. C. Champion to undertake their examination. He kindly did this with great care, and found that in only one specimen were the claws dentate. It is remarkable that neither I nor any one else had detected this before, as they have been often under the microscope; I certainly did not suspect that they were distinct, and as the claws of one were more or less hidden by gum, it remained unnoticed.

One of my two specimens is therefore *C. asellus*; the other one Mr. Champion refers to *C. equiseti* (Hbst., Er., *nec* Steph.), a species unrecorded from Britain.

C. cinereus was introduced as a British species by Mr. G. R. Waterhouse, in his paper, "On the Elateridæ of the Stephensian *Cabinet*" (Trans. Ent. Soc., 1859). He there says, "The true *Elater* *equiseti* of Herbst (Archiv., 114) belongs, according to Erichson and Kiesenwetter, to the section of the genus *Cardiophorus* in which the claws are dentate; Stephens' insect has them simple, and appears to agree on the whole with Erichson's description of *C. asellus*; there is, however, in Stephens' collection a specimen of a *Cardiophorus* in which the claws are dentate (it stands, with specimens of *C. asellus*, under the name of *cordiger* in his collection); this specimen I am inclined to refer to the *C. cinereus* of Erichson (*Elater cinereus*, Hbst.). Of the same species there are two or three specimens in Leach's collection."

I have lately examined these specimens, with the assistance of a continental series of *C. cinereus*. Two of Leach's certainly, most probably the third, are to be assigned to *C. equiseti*; on these were based my identification of the Tenby specimen as *C. cinereus*, it agreeing exactly with one of them. The example in Stephens' collection appears to me to be a true *cinereus*, but its condition is hardly good enough to allow me to feel positive. There is, of course, no record of locality attached to them.

I can find no other evidence of the occurrence of either *C. cinereus* or *C. equiseti* in Britain; but examples may occur and be overlooked in other collections, as the species are indistinguishable from *C. asellus* without careful examination, and have never been described in any work on British *Coleoptera*, the *C. equiseti* of Stephens' Manual of course being a misnomer for *C. asellus*.

The tarsal claws will distinguish them from *asellus*; they should be looked at sideways with a compound microscope.

The following is a description of my specimen:—

CARDIOPHORUS EQUISETI (Herbst, Er., *nec* Stephens).

Black, densely and finely punctured all over, with close ashy-grey pubescence without fulvous tinge; narrower and more parallel than *C. asellus*. Thorax convex, slightly longer than broad, its sides moderately rounded, the anterior third nearly straight, more contracted at base than in *C. asellus*, with central furrow distinct behind and two short lateral sulci at base.

Elytra much wider at thorax than at base, and two and a half times as long, sides nearly parallel in anterior half, slightly contracted behind shoulders and dilated at middle, thence gradually narrowed to apex, flattened along suture, with punctured striæ, *the interstices convex at base.*

Antennæ and palpi black; legs black, with knees slightly pitchy and tarsi reddish; *all tarsal claws dentate.* Apex of last two abdominal segments pitchy.

Long., 7½ mm., lat., 2¼ mm.

Finally, if, as I hope, other specimens are taken at Tenby, I shall be very glad if their captors will allow me the opportunity of examining them.

48, Wimpole Street, W.:
March 9th, 1890.

ON *HISTERIDÆ* COLLECTED IN COCHIN CHINA BY MONSIEUR DALAUNAY.

BY GEORGE LEWIS, F.L.S.

At the request of Monsieur A. Grouvelle I have lately determined the names of the *Histeridæ* collected in Cochin China by Monsieur Dalaunay; only one requires a description. The species are *Platysoma Confucii*, Mars., *Marseuli*, Cand. (*odiosum*, Mars.); *Hister chinensis*, Mars., *lutarius*, Er., *squalidus*, Er., *cælestis*, Mars.; *Epierus Dalaunayi*, n. sp.; *Saprinus ovalis*, Mars., *sinæ*, Mars.; and *Paromalus Khongius*, Mars. The collection is thus seen to be a very small one, and as it contains only three or four sub-cortical species, it can hardly be called a representative one of the region of enormous forests in which it was gathered. The *Histeridæ* are not a very attractive Family to entomologists generally, and I have no doubt M. Dalaunay paid more attention to other groups. I have much pleasure in naming the new species after him.

EPIERUS DALAUNAYI, *n. sp.*

Ellipticus, convexus, niger nitidus, antennis pedibusque rufis; fronte inter oculos parum convexa, clypeo impresso; pronoto stria marginali integra tenuiter punctulato lateralibus punctis majoribus intermixis; elytris striis tenuiter crenatis, 1—4 *integris,* 5—6 *basi abbreviatis, interstitiis evidenter punctulatis; propygidio parce et grosse punctato, pygidio apice lævi; prosterno angustato bistriato, striis sub-parallelis antice leviter divaricatis; mesosterno late emarginato, stria integra antice tenue impressa, subtilissim punctulata; tibiis anticis serrulatis, posticis ciliatis. Long.,* 2¼ *mill.*

Hab.: Cambodia. Two examples.

This species is an interesting addition to the genus, as the known species from Asia are very limited in number. Among the Asian species it is remarkable for its elliptical outline and convex form, and for the large punctures on the propygidium. The pygidium also has a few smaller punctures at its base, which gradually lessen in number until they leave the apex smooth.

Queen's Ride, Barnes:
February 20th, 1890.

Note on Monoplius pinguis, Lewis, Ent. Mo. Mag., xvi, *p.* 60, 1879.—Mr. Péringuey last year described this species as *Saulister* (*Marseulia*) *singularis*, in the Tr. S. African Phil. Soc., iv, p. 87, but there is no doubt it is a true *Monoplius*. There are only slight differences between *Monoplius pinguis* and *inflatus*, Marseul, except the colour and the elytral sculpture. The elytral sculpture of *pinguis* somewhat resembles that of *Margarinotus scaber*, F., in its series of smooth spaces, but it is more like *Chrysomela guttata*, Gebl. (*subænea*, Mots.), in this respect, as I stated. *Margarinotus* has smooth dorsal spaces, which are raised, and are described as tubercles, but in the *Monoplius* the spaces are not sufficiently raised to be called tuberculate. In both *Monoplius pinguis* and in *inflatus* the curious strigose sculpture of the upper surface of the head, thorax, and interspaces of the elytra is almost identical; and beneath *pinguis* differs chiefly from *inflatus* in having the prosternal striæ shorter, closer together, and they meet anteriorly, and the punctuation of the mesosternum is clearer. Mr. Péringuey is perfectly right in stating that the funicle of the antenna in *Monoplius* is 7-jointed, for Marseul failed to observe the 7th joint, which lies close to the club, and is somewhat spread out beneath it.—G. Lewis, 1, Queen's Ride, Barnes: *February*, 1890.

ON A NEW SPECIES BELONGING TO THE GENUS *LANGURIA*.

BY THE REV. CANON FOWLER, M.A., F.L.S., &c.

As a rule, I object to the practice of describing single species, but as I have retained the insect described below for a long time, and am anxious to return it to its owner, and as I have no further paper on *Languriidæ* in hand at present, and, as besides, it is a conspicuous and easily recognised species, I have thought it better not to leave it undescribed: I have never seen a species like it.

Languria ochreipennis, *n. sp.*

Nigra, nitida, elytris, scutello, ore abdomineque ochreo-flavis; capite sat magno, oculis prominulis, antennis piceis, articulo primo flavo, clava sensim 5-articulata; thorace sub-globoso, nitidissimo, fere lævi; elytris ad apicem angustatis, ordinibus punctorum leviter instructis, apicibus late rotundatis; abdomine parce punctato, metasterno longo, convexo, lineis coxalibus nullis; pedibus longis, nigris, genubus piceo-flavis. *Long.*, 6 *mm.*

Black, shining, with the elytra, scutellum, abdomen, and mouth parts yellow; head rather large, eyes prominent; antennæ with a gradual five-jointed club, last joint long; thorax sub-globose, deep black, very shining, almost impunctate, with the sides strongly rounded and dilated about the middle, and with a rather well-marked transverse basal furrow, bounded on each side by a very short longitudinal line; elytra and scutellum of a bright ochreous-yellow colour, shoulders of the former well-marked, apices broadly rounded, rows of punctures rather fine and not deeply impressed; abdomen yellow, sparingly punctured; legs long, black, knees pitchy; metasternum long, convex.

Malacca: in Dr. Sharp's collection.

Lincoln: *January 29th*, 1890.

NOTES ON THE BRITISH *PLATYPEZIDÆ*.

BY C. W. DALE, F.E.S.

This family is a very interesting one on two accounts: firstly, because of the general rarity of the species; and secondly, on account of the dissimilarity of the sexes. Walker, in his work on British *Diptera*, gives ten species of *Platypeza*, and five of *Callomyia*. I possess six of the former, and four of the latter. They frequent shady places.

Platypeza rufa, Meig.—First taken by my father at Bonchurch, in the Isle of Wight, October 16th, 1866. Since, at Glanville's Wootton, by myself, but by no means commonly. It is a truly autumnal species, ranging from September 12th to October 16th. Zetterstedt records it in Scandinavia from September 19th to October 4th. I first recorded it as British in the "History of Glanville's Wootton," 1878, and am very glad to have had the determination recently confirmed by Mr. Verrall. It can be easily distinguished from any other British species of the genus by the wings of the ♂ being dark, and of the ♀ light. Its nearest relative is *P. modesta*.

P. modesta, Zett.—This was first recorded as British by myself, in 1878, in the "History of Glanville's Wootton," and the determination has been recently confirmed by Mr. Verrall. It was taken at Bonchurch, Isle of Wight, by my father, on October 16th, 1866, and has since been found at Glanville's Wootton. It is by far the most common species of the family, and I have met with it from September 24th to November 7th. Zetterstedt gives it as occurring in Scandinavia and Denmark during October. The wings of the ♂ are dark, and of the ♀ light, much resembling some of the species of the old genus *Anthomyia*. Zetterstedt's description of it is as follows:—"*P. modesta*: atra, thorace anoque obscure cinereis, illo vittis 4 nigris (♂); aut cinerea, thoracis lineolis 3 brunneis, et abdominis fasciis 4 subtriangulariter nigris (♀); antennis nigris, basi testaceis; alis subfumatis (♂), aut hyalinis (♀); nervulo transverso antico ante apicem auxiliari sito; area angulari valde contracta; halteribus ventre pedibusque fusco-testaceis (♂), aut flavescentibus (♀). ♂ ♀, Long., 1¼, 1¾ lin."

P. infumata, Hal.—Next to *modesta*, this is the commonest species. It occurs from September 7th to November 2nd.

P. picta, Meig.—This appears to be a very rare species. I have a ♀ taken by my father at Glanville's Wootton, October 22nd, 1846; another ♀ taken by myself, October 11th, 1880; and four ♂, taken September 27th, 1876, and October 11th, 1880. It is the largest species: long., 2—3 lin.; exp., 4—6 lin.

P. aterrima, Walk.—This is also a scarce species. I took a specimen at Hastings, October, 1871; and one here, January 28th, 1880.

P. boletina, Fall.—This is the smallest species. It is not so autumnal as the rest of the genus. I have taken it from June 28th to September 24th, but never in October. It somewhat resembles *picta*, but is only half the size. The ♂ has wings not so dark as in the other species.

Callomyia elegans, F.—Of this pretty insect I possess three specimens, viz.: a ♀, taken by my father at Glanville's Wootton, July 15th, 1862; a ♂, by myself, on July 2nd, 1888; and a ♀, June 27th, 1875.

C. speciosa, Meig.—Of this I possess three ♂ specimens, viz.: one taken by my father, June 6th, 1861; and two by myself, May 28th, 1873, and July 17th, *1873; all* at Glanville's Wootton.

C. **LEPTIPENNIS**, Fall.—Of this I have one taken by my father in the Leigh Woods, Bristol, May 25th, 1845. It is considered to be a variety of *elegans*.

C. **ANTENNATA**, Zett.—A ♂ of this I took at Glanville's Wootton, May 15th, 1878. It is much smaller than *elegans*, and very distinct.

PLATYCNEMA PULICARIA, Fall.—Not scarce on oaks in May.

OPETIA NIGRA, Meig.—My specimens were taken by Mr. Haliday, at Belfast, in June, 1838.

Glanville's Wootton:
February, 1890.

Capture of two rare species of Mycetophilidæ.—Empheria pictipennis, Hal.: of this exceedingly pretty fly I took a specimen on October 8th, 1887; it was described from a specimen taken in Devonshire by Haliday in the Entomological Magazine for 1833. I know of no others. *Sciara elegans*, Winn.: of this I took a couple at Glanville's Wootton on August 27th and October 3rd, 1889; this is a species entirely new to Britain, and was kindly named for me by Mr. Verrall.—C. W. **DALE**, Glanville's Wootton, Dorset: *February 23rd*, 1890.

The Bigelovia Cecid.—As I had occasion to refer to this undescribed species in your last volume, pp. 324, 363, it may not be amiss to offer a description of it:—

Cecidomyia bigeloviæ, n. sp. ♀, length, about 2¾ mill.; expanse, about 4 mill. Head and thorax dark; abdomen reddish. Antennæ pale brownish, hairy, 13-jointed. Thorax dark brown, smooth; scutellum smooth; halteres whitish; abdomen dull pinkish-red, only slightly hairy, with a pale ovipositor quite two-thirds as long as abdomen. Legs pale brownish. Wings hyaline, somewhat iridescent, lower margin fringed. Venation as in *C. destructor*. Bred, May, 1889, from galls of *Trypeta bigeloviæ*, n. sp., on *Bigelovia*, West Cliff, Colorado. On June 3rd, two apparent males were found in the box with the galls, but they were dead and dried up, so that their structure could not be made out. The egg of this species is elongate, with rounded ends and approximately parallel sides, its contents are orange. The *Trypeta* was also bred from these galls, and a description of it will be published.—T. D. A. **COCKERELL**, West Cliff, Custer Co., Colorado: *February 24th*, 1890.

Volucella bombylans, L., and its variation.—There is a fly, *Volucella bombylans*, which consists of two quite distinct varieties, in one the abdomen towards the tip is clothed with orange-coloured hairs, while the base of the abdomen and the thorax are quite black, in the other the tip of the abdomen is clothed with white hairs, and the base of the abdomen and the thorax are clothed with tawny hairs; one variety does not seem more uncommon than the other. I have taken the two varieties together, but have always found them quite distinct, and with no connecting links. All the authorities on the *Diptera* that I have been able to consult are agreed that the larva of *Volucella bombylans* is parasitic in the nests of humble-bees, but none of them mention whether it is so on any particular species of *Bombus*.

While wondering on this curious dimorphism, it suddenly struck me that the red-tailed variety closely mimics *Bombus lapidarius*, while the white-tailed variety mimics *Bombus terrestris*, and by adopting this double livery, the fly has gained admittance to the nests of two of our most abundant species of humble-bee.

Still, I think the bees must often detect the intruders, otherwise considering how very abundant *B. lapidarius* and *B. terrestris* are, *Volucella bombylans* would be far more plentiful than it is.—LINLEY BLATHWAYT, Batheaston: *Feb. 19th*, 1890.

Platyrrhinus latirostris, F., in Devonshire.—Mr. J. C. Bowring writes to me that he has taken three specimens of this rare beetle under the bark of a felled oak in Ugbrooke Park, near Chudleigh, Devon; two in September, 1889, and one in September, 1888.—W. W. FOWLER, Lincoln: *March 13th*, 1890.

Dytiscus marginalis found in gas water.—Some interesting notes were contributed to the Ent. Mo. Mag. in June and July, 1885, on *Dytiscus marginalis* and other *Coleoptera* found in salt or brackish water. The Rev. W. W. Fowler supplemented these notes with a few remarks, and expressed an opinion that *D. marginalis* might live in a medium far more injurious than salt water. Doubtless examples were not wanting in support of this belief, although none were given at the time.

As a curious instance has come under my notice of the strangely little regard apparently given by *D. marginalis* to the nature of the fluid in which it exists, and of the thriving of beetles in a medium which, to our minds, might appear injurious, I venture to record it, hoping it may be of interest, and I think it certainly well illustrates the words quoted.

The men employed in breaking up an old disused gasometer at Home Park Mills, King's Langley, called my attention to the fact, that some "very curious beetles," of which they of course gave a very extraordinary description, were living in the rusty water at the bottom of the hole left when they had removed the iron casing. Both the water and mud were strongly impregnated with gas. The beetles proved to be of the above-mentioned species, and were there in some numbers. Many were carried away in pumping off the water, but I have secured 5 ♂ and 1 ♀ specimens from the mud and shallow water left. They carry with them a strong odour of gas, even after two or three fresh water baths, and the grooves in the elytra of the females are filled with a ferruginous mud which is difficult to remove. In other respects they appear to be quite normal in form and colour. I think this old gas holder must have been their home for a long period of beetle life, judging from the time of year when they were found, a fortnight ago, and from the number of *both* sexes seen. The water was partly enclosed and quite stagnant, being unconnected with any other water. Were they there by choice? If not, why did they not emigrate? Most likely they came there by chance, as they are plentiful in the canal not far away, and lacking the inclination to depart, "made themselves at home." Had the water been disagreeable to them, we may presume they would not have done so; they were quite active when disturbed.—T. H. HALL, 12, Derby Road, Watford, Herts.: *March 5th*, 1890.

Drepanopteryx phalænoides, L., in Durham.—About three or four years ago, in September, I took two insects at Gibside, which, from your description of the one you took, I take to be the same, but I have never been able to get the name. I beat *them out of* a beech branch near the Monument, not far from a pond; when caught they lay quite still in the net. I have given a rough sketch of a fore-wing, which perhaps will give you an idea of what it is like.—MATTHEW HENDERSON, Minories, Jesmond Road, Newcastle-on-Tyne: *March 10th*, 1890.

[This communication was in the form of a letter to Mr. Mitchell (*cf. ante* p. 90). There can be no doubt of the identity according to the sketch sent. Gibside is in North Durham on the Derwent, a tributary of the Tyne. I find there is some slight popular misapprehension as to the nature of this insect, probably because most of the British specimens have been captured near water. Suffice it to say that it has nothing whatever to do with "Caddis-flies," but belongs to the "Lace-wing" division of Neuropterous insects, and that the larva feeds on *Aphides*, of which it destroys large numbers.—R. MCLACHLAN].

The distribution of Bombus Smithianus, White.—This *Bombus* is generally considered a northern species. Mr. Saunders, in his "Synopsis," says of it, "This beautiful species has at present only been found in the extreme north, and is recorded from Shetland and the Hebrides." In the Entomologist for 1879 (p. 54), however, Mr. J. B. Bridgman records both male and female as having been taken at Tresco (Scilly Isles)! Amongst a few *Hymenoptera* caught this year, and sent for my inspection by Mr. O. H. Latter, of Keble College, Oxford, was a single worker of this same species. This, he informs me, he caught about a mile and a half north-west of Dover "last August," and that he knows of another specimen caught also in Kent during the past summer.

The distribution of the species is certainly remarkable; it would seem probable that it once occupied a much wider range, but is now in a decadent state. Its occurrence in the extreme Northern and Southern Islands above mentioned points to such a conclusion. It must be very scarce in the South of England generally, as it is so distinct that it would not be likely to be overlooked for one of the commoner brown species, *B. muscorum* or *B. cognatus.*—R. C. L. PERKINS, Sopworth Rectory, Chippenham: *February 25th*, 1890.

Date of Zeller's Crambidæ.—Prof. Fernald has lately published his reasons for believing that Zeller's Monograph of the *Crambidæ* is earlier than the 27th Part of Walker's British Museum Catalogue, which he has ascertained to have been pubpublished April 18th, 1863. He finds Zeller's papers to have been issued in conjunction with a School Report, on the title page of which is an invitation to friends of the school generally to attend a public function on March 30th, 1863. I submit that this reason is not conclusive in the absence of more direct evidence; it shows doubtless, that it was intended to issue the Report in question by that date, but it does not follow that the intention was successfully carried out.

Whilst lately visiting my friend, Mr. G. T. Baker, I happened to mention this; and he immediately produced a copy of Zeller's Monograph, on the title page of which was written in Zeller's own hand-writing, "*ed. July*, 1863." It appears to me that this is direct and unmistakeable evidence which outweighs the probabilities involved in Prof. Fernald's argument. I have communicated this fact to him, but meanwhile I think it ought to be placed at once on record.—E. MEYRICK, Ramsbury, Hungerford: *February 14th, 1890.*

[I am able to supplement Mr. Meyrick's note, with the following translated extracts from Professor Zeller's letters, which were written whilst the printing of his "Crambiden" treatise was in progress:—

Meseritz, 11th April, 1863.—The third half-sheet of my Crambiden is printed.

Meseritz, 1st May, 1863.—Of my Crambiden, three sheets are now printed; as the printer says it will make about 8 sheets, it will be July before it is finished.

Meseritz, 21st June, 1863.—Next week the printing of my Crambiden will be finished, I am now busy with the Index and list of Errata.

Meseritz, 21st July, 1863.—Herewith you will receive some separate copies of my Crambiden. The reason for the date of publication being *written* is that the year appears on the title of the "Schulnachricht," which remains here.

H. T. Stainton: *February 26th*, 1890.]

Bryotropha obscurella, Hein., a British species.—A good many years ago Prof. Zeller picked out from among a lot of insects which I sent him a *Gelechia*, which he told me agreed with *obscurella*, Hein. This being my only specimen, and its locality doubtful, it remained unrecorded. More recently, Mr. Sang sent me specimens, not so dark in colour, taken by himself in the Darlington district, which have been recognised by Mr. Warren, from Heinemann's description, as the same species. In addition to these, I have now two specimens, sent by Mr. Hodgkinson, and taken by him in the Windermere district, which are clearly like the original specimen picked out by Zeller. We may now, therefore, safely include this—most suitably named—species in the British fauna.

Heinemann describes it: "Anterior-wings dark brown-grey, with two black oblique spots before the middle, and two more spots, one near the base, and the other at the transverse nervure. The hind-wings posteriorly concave, with a very narrow apex. Head yellow-grey, palpi externally dusted with brown. Size, 5¼ lines."

Another specimen, with the anterior-wings similar, only without a hinder fascia (which, however, he did not mention in the first) "only round the spots somewhat indistinctly lighter." These descriptions point evidently to the lighter and darker forms which I have mentioned. It is a very obscure species, near to *senectella*, but with longer wings, and varying to very much darker than that species.—C. G. Barrett, Somerset House: *January 14th*, 1890.

Doryphora elongella, Hein., a British species.—Some years ago, while at Pembroke, I swept about a dozen specimens of an obscure looking *Gelechia* off clover at the quarries. They were evidently allied to *lutulentella*, but did not agree altogether with that species, and remained unnamed in my collection until recently, when Mr. Warren recognised them as *elongella*, Hein., and having now seen Heinemann's description, I am convinced that he is right.

Heinemann describes it: "Anterior-wings brown-grey, with indistinct, dark, longitudinal streaks in the fold, the middle cell, and under the costa, a dark spot on the transverse nervure, and a whitish costal spot beyond the middle. Hind-wings paler. The abdomen above pale yellow." He places it next to *lucidella*, and very justly remarks on its similarity in the shape of the wings, and in the neuration to *that species*, from which it differs in the absence of yellowish mixture in the fore-wings, and in the yellowish abdomen. This last character separates it also from *lutulentella*, which also is devoid of the slight markings found in the present species. I have seen no specimens except those from Pembroke, and think it rare and extremely local.—ID.

Review.

THE BUTTERFLIES OF NORTH AMERICA: by W. H. EDWARDS. Third Series, Part ix. Houghton, Mifflin, & Co., Boston and New York; Trübner & Co., London. 1890.

This Part contains *Argynnis nevadensis*, Edw., *A. Halcyone*, Edw., *A. Aphrodite*, F. (early stages), *Satyrus Pegala*, F., and var. (?) *Alope*, Bdv., and *Erebia episodea*, Butl., with var. *Brucei*, Elwes. This latter article is most exhaustive, both as regards variation and local distribution, together with metamorphoses, about forty figures being crowded into the plate; in the text there are instructive details on the distribution of *Erebia* in general. The author promises to give, hereafter, demonstrations to prove that the *Satyrinæ* (of which *Erebia* is one) are naturally at the bottom of the series in an arrangement of Diurnal *Lepidoptera*.

Obituary.

Professor Heinrich Frey, M.D.—Heinrich Frey was born June 15th, 1822, at Frankfort-on-the-Main, where in due time he went to the Gymnasium, and remained there till he was 16. During this period he was acquainted with Senator von Heyden, from whom no doubt he received an impetus to the study of Entomology. After the Gymnasium came the University, and young Frey went, in 1838, to Bonn, thence to Berlin, and thence to Göttingen.

It was when he returned home to Frankfort for the first time from Bonn, in 1839, that his friend von Heyden showed him Zeller's "Attempt at a Systematic Arrangement of the Tineinea," which had then just appeared in Oken's Isis. He has himself told us, in his notice of the life of Professor Zeller (Stettin. ent. Zeit., 1883, p. 414) with what enthusiastic delight he read this treatise, which shed such a brilliant light and arranged in an orderly system a group of insects, which till then had remained in a state of confusion that seemed quite hopeless to attempt to unravel.

At Göttingen he was established as a private tutor in 1847, and the following year he was appointed to an extraordinary Professorship there.

In 1849 he received a call from the University of Zurich, and though Göttingen would gladly have retained the young Professor, the attractions of Switzerland, its Republican freedom, and its scenery, determined him to accept the Professorship at Zurich, which henceforth became the home of his remaining life.

In 1851 he was advanced to the position of ordinary Professor of the medical faculty, and in 1855 to this he added the position of Professor at the confederate Polytechnikum, and also became Director of the microscopical anatomical institute. From 1854 to 1856 he was Rector of the High School there.

Heinrich Frey's first Entomological treatise was on the Swiss species of the genus *Lithocolletis*, "Uuber die in der Schweiz beobachteten Arten des Genus Lithocolletis, Zell.," which appeared in 1855 in the Mittheilungen der naturf. Gesellschaft in Zürich, band iii, pp. 600—635.

This was soon followed by an 8vo volume of 430 pages, "Die Tineen und Pterophoren der Schweiz," published in 1856. Of this work we wrote at the time it appeared (Trans. Ent. Soc. London, New Series, iv, p. 86), "During the last month an unpretending 8vo volume of 430 pages, without plates, has appeared, which at once takes its stand as *the* Continental work on the Tineinia." "On account of the immense amount of systematized details it gives of the habits of the families, genera and species, of their geographical distribution throughout Europe, it will be read with extreme interest in every corner of Germany, and indeed wherever the German language is understood." "In short, this volume clearly establishes the reputation of Professor Frey of Zurich as the first Micro-Lepidopterist in Europe."

When one reflects that this was almost his first appearance as an Entomological author (his previous publications relating mainly to *Mollusca*, to study which group he had, when at Göttingen, made, along with his friend Leuckart, an excursion to Heligoland), one is struck with the completeness and finish of such a first work.

In the same year (1856) he wrote a short paper "On the Generation of Insects from Unfertilised Eggs, in reference to von Siebold's recent work on that subject;" this appeared in the "Monatsschrift des wissenchaftlichens Vereins in Zürich," i, pp. 473—483.

In 1857 appeared, in the 11th volume of the Linnæa Entomologica, his "Revision der Nepticulen," extending to 96 pages (351—446). Frey notes in this treatise how rapidly our knowledge of these small, but beautiful insects had increased in the previous ten years, so that he was then able to describe 56 species, whereby he gave a great impetus to the study of these splendid atoms. (The Catalogue of Staudinger and Wocke, in 1871, enumerates 111 species of the genus, and so many novelties have been found since, owing to the greatly increased number of workers in the group, that I dare say we have now well nigh 200 species of *Nepticula* in Europe).

In the Entomologist's Annual for 1858 was a chapter by him on "The Tineæ of the Higher Alps," pp. 137—150, pointing out that in the upper Alpine Fields small moths were not nearly so numerous as butterflies.

The three volumes of the "Linnæa Entomologica," xiii, xiv and xv, published in 1859, 1860 and 1863, each contain a Treatise by Professor Frey: that in vol. xiii on the genus *Elachista*, pp. 172—314; that in vol. xiv on the genus *Laverna*, pp. 180—205; and that in vol. xv on the genus *Ornix*, pp. 1—41.

His next Entomological work appeared from 1865 to 1869, in the first three volumes of the Mittheilungen der schweizerischen entomologischen Gesellschaft on the Swiss *Micro-Lepidoptera*, "Die schweizerischen Microlepidopteren;" of this there were six separate parts—one near the end of the first volume, pp. 329—352; four in the second volume, pp. 136—146, 169—186, 286—303, and 376—380; and one in the third volume, pp. 28—43. This work is interesting, specially from commencing with the Plumes, then going to *Nepticula*, and, so to speak, working backwards, finishing with *Exapate*.

These papers were followed in 1870 by "Ein Beitrag zur Kenntniss der Micro-

Lepidopteren," in the third volume of the same publication, pp. 244—256, 277—289, and 290—296. In this many new species were described, and fearing that non-Swiss Entomologists might be inconvenienced if these descriptions were confined to the journal in which they had first appeared, the whole paper was reprinted in the "Stettiner entomologische Zeitung" for 1871, pp. 101—130, the writer wishing, as he said in his letter to Dr. C. A. Dohrn, to reach a more extended circle of Entomological readers.

After three more short papers in the Swiss "Mittheilungen," vol. iii, pp. 406, 407, one of which was a critical notice of Staudinger and Wocke's Catalogue of *Lepidoptera* (the newly resuscitated names in which for half our best known species were not at all to Frey's fancy, who looked upon them as an ill-advised step resulting from a fanatical worship of priority), there appeared in the "Stettin entomologische Zeitung" for 1873, pp. 201—224, a joint paper by Frey and Boll, describing a number of new species of North American Micros, which had been bred at Zürich from pupæ from North America, which Boll has brought home with him on his hasty return to Europe in February, 1872.

Unfortunately, in the hurry of leaving Massachusetts for Switzerland, the mined leaves collected in the neighbourhood of Boston and Cambridge had been hastily packed together, and of many of the novelties bred, it was quite impossible to pronounce with any certainty what had been their respective food-plants.

The writers of this paper were attacked by Mr. V. T. Chambers, Kentucky "Cincinnati Quarterly Journal of Science," 1874, p. 193, and charged with "stealing species." This curious application of the "Monroe doctrine" to science elicited a reply to the charge of theft from Professor Frey in the "Stettin. ent. Zeit." for 1875, pp. 352—355. And he and Boll, who had then returned to Dallas, in Texas, contributed two more papers on "Tineen aus Texas" to the same journal for 1876, pp. 209—228, and for 1878, pp. 249—279.

In 1877 Frey contributed an interesting paper on the *Lepidoptera* of the Albula Pass to the "Jahresbericht der naturforschenden Gesellschaft Graubündens," pp. 112—150; the same subject is also treated in a paper which he read at Basle, printed in the "Mittheilungen," iv, pp. 550—556. A few years later he had a short notice on the *Micro-Lepidoptera* of 1879 in the "Jahresbericht der zoologischen Station in Neapel." Professor Frey's greatest Entomological publication, "Die Lepidopteren der Schweiz," a tall 8vo of 454 pages, did not appear till 1880, when he had attained the demure age of 58. It treats of the whole of the Swiss *Lepidoptera* from the Butterflies to the Plumes, giving the habits and localities, and the elevations above the sea-level attained by each species; but it is not a descriptive work, except that in it there is special mention of any peculiar varieties which are inhabitants of the more alpine regions.

Those puzzling species and groups (which are very apt to be placed by each systematist in some different position) *Sarrotripa revagana*, *Earias*, *Hylophila*, and *Nola*, he places all together at the beginning of the *Bombyces*, the genus *Nola* being included amongst the *Lithosidæ*. The *Choreutidæ* (another puzzling group of moths) he places at the beginning of the "Tineen." To this "Lepidopteren der Schweiz" three supplements ("Nachträge) have appeared, one in 1881, one in 1882, and one in 1884.

In 1880 Frey gave a short sketch of J. S. Hnatek in the "Mittheilungen der schweiz. entom. Gesellschaft," v, pp. 557—560, and his notice of Jacob Boll, "for 30 years his truest and most intimate friend in Switzerland," appears in vol. vi, pp. 47—51. Frey had first made the acquaintance of Boll in Zürich in 1849 or 1850. Boll, born in 1828, thus six years his junior, had then just completed his pharmaceutical studies at Jena; their acquaintance soon ripened into friendship, and they made many entomological excursions together, and Boll's observations, "He was a born collector, with a wonderfully sharp eye," had much contributed towards the "Tineen und Pterophoren der Schweiz." Boll's parents and elder brothers had emigrated from Switzerland and settled at Dallas, in Texas. Boll had an idea of following them there, he had an apothecary's business at Bremgarten which furnished but slender profits; this he disposed of and went to Texas, thereby opening a new page in the history of North American Micro-Lepidoptera. It is perhaps not a treasonable expression, if I mention that up to that time no American Entomologist had mastered the art of manipulating and setting out the smaller *Lepidoptera*. Boll, with his hands and eyes trained in Switzerland, was a new importation in Texas, and could readily make in a few months such a collection as had never previously existed. After staying more than a year, he went with his collections to Cambridge, near Boston, and there saw Professor Agassiz, who purchased all his collections for the Museum, and perceiving at a glance the value of the man, offered him a situation there; before settling at Cambridge he returned to Switzerland. He was so altered with his short residence in America, that Frey could hardly recognise him, "he had become intellectually quite another man; the journey had had a wonderful influence upon him." Boll had returned to Agassiz in 1871, and that autumn made the collections of mined leaves which led to the first joint paper by Frey and Boll on American Micros. Boll's wife was attacked with serious illness; Boll hastily returned to Switzerland, but his wife's illness was incurable, and to add to his troubles, she lost her reason; he remained in Switzerland two years, till the sufferings of his wife were ended by her death. He was then preparing to return to Cambridge, when Agassiz was suddenly stricken down and soon was no more. Boll returned, however, to Dallas, in Texas, where his father and elder brothers were settled, and collected diligently; in 1875 he returned to Europe, and spent a week at Zürich with Frey. After Boll had again gone back to Texas, he was engaged by Professor Cope to collect fossil remains in Western Texas; unfortunately there, whilst camping out far from any settlements, a serious ailment attacked him, and carried him off on the 29th of September, 1880.

In the "Stettin. ent. Zeit." for 1883 appeared an obituary notice of Professor P. C. Zeller, from the pen of Professor Frey, pp. 413—417. This notice, though shorter than one could have wished, is extremely interesting, and is evidently the work of a deeply-moved, warm hearted friend. In 1884 appeared, in the "Mittheilungen," vi, pp. 689—692, a short paper by Frey on "*Teras hippophaëana*, v. Heyden, a Proteus among the Tortrices." In 1885, in the "Stettin. ent. Zeit.," pp. 97—108, appeared a treatise, "Zur Kenntniss des Tineen—genus *Elachista*," by H. Frey, which may be considered as supplementary to his Monograph of that genus in the 13th volume of the Linnæa Entomologica.

Professor Frey, besides being so world-renowned as an Entomologist, had a very considerable reputation as a writer of medical works: his "Histologie und Histochemie der Menschen" appeared in 1859, and reached a fifth edition in 1876, besides being translated into English, into French, and into Russian. "Das Microscop und die microscopische Technik" appeared in 1863, reached an eighth edition in 1886, and was also translated into English, French, and Russian. A third work, "Grundzüge der Histologie" appeared in 1875, reached a third edition in 1885, and was translated into English, French, Italian, and Spanish.

Professor Frey was married April 21st, 1852, to Doris, a daughter of Dr. A. Clemens, a Physician of Frankfort; in the early years of his marriage two sons were born to him, then, after eight years, a third son was born, but only lived eight weeks. The eldest son died January 18th, 1882, when about 29 years old; the second son married, and is settled at Genoa, but has not developed any entomological tastes; perhaps, however, they may be looked for in his progeny.

On August 7th, 1889, Professor Frey was attacked with apoplexy, and his death ensued on January 17th, 1890.—H. T. S.

Eugène Desmarest.—The Entomological Society of France has been singularly unfortunate in losing, within a few days of each other, two of its oldest and most important officials. Following close upon the Hon. Treasurer, it has now to mourn the loss of the Senior Secretary, who had occupied the position since 1840, and who was mainly responsible for the very copious "Bulletins" that are appended to the "Annales." He died just before last Christmas, somewhat suddenly, only two days after his annual re-election, at which he was absent for the first time, owing to an illness that was not looked upon as serious. He held the position of Keeper of the Department of Comparative Anatomy at the Museum of the Jardin des Plantes, and became a member of the Entomological Society of France in 1838. His entomological works, outside the editing of the French "Annales," were not very numerous, and were mainly on the line of economic entomology. He was a Naturalist by descent, for his father, an official veterinary surgeon, published much on Entomology, and was the founder of that much discussed, and very extraordinary, Coleopterous genus *Hypocephalus*, though many probably associate it with the son.

Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: *February 12th*, 1890.—Mr. W. G. BLATCH, President, in the Chair.

Mr. C. J. Wainwright read a paper on "One day's work in Wyre Forest," in which he described an unusually good day's collecting. Many good species were taken, including larvæ of *Endromis versicolor*, many of *Asphalia flavicornis*, *Pterostoma palpina*, &c. He urged on the Members to devote special energies to the Forest, which he believed to be the best district, at any rate, in the Midlands. Considerable discussion followed, in which Messrs. G. T. Baker, W. G. Blatch, and R. C. Bradley joined.

March 3rd, 1890.—The President in the Chair.

Messrs. *H. M. Lee*, *A. Johnson*, and R. P. Gilbert were elected Members of the *Society*.

Mr. A. H. Martineau showed a large exotic *Bombyx*, bred from an evidently imported larva sent from Yorkshire. Mr. W. G. Blatch showed *Phibalapteryx lapidata*, taken on Shap Fell in September last; this, he believed, to be the first recorded capture in England. Rev. C. F. Thornewill remarked that he had noticed two apparently distinct forms of *Phigalia pedaria* around Burton-on-Trent. One, early, large and well-marked, found in the open country; and one, three weeks later, small, and but slightly marked, found in the woods. He wished other Members to attend to the species in their localities. Mr. Thornewill then read a paper on the *Lepidoptera* of Burton-on-Trent, in which he mentioned the most interesting species taken in or near the town. Butterflies were decreasing in number of species; the list showed many *Sphinges*, a fair number of *Geometræ* and *Bombyces*, but not many *Noctuæ*.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: *January* 23*rd*, 1890.—T. R. BILLUPS, Esq., F.E.S., President, in the Chair.

Messrs. G. A. Lewcock, of Islington, W. Gardner, of Liverpool, and P. Bright, of Bournemouth, were elected Members.

The Treasurer read the Balance Sheet, and the Secretary the Report of the Council for 1889; from the latter of which it appeared that 44 Members had joined the Society during the year, this making a total membership of 223, consisting of 6 Honorary, 3 Life, 47 Country, and 167 Full Members.

The election of Officers was then proceeded with, and resulted as follows: Mr. J. T. Carrington, F.L.S., President; Messrs. Tugwell and J. Jenner Weir, F.L.S., &c., Vice-Presidents; Mr. E. Step, Hon. Treasurer; Mr. W. West, Hon. Curator; Mr. D. J. Rice, Hon. Librarian; and Messrs. H. W. Barker and D. J. Rice, Hon. Secretaries; Messrs. R. Adkin, F.E.S., T. R. Billups, F.E.S., T. W. Hall, F.E.S., J. R. Wellman, R. South, F.E.S., C. A. Briggs, F.E.S., and C. G. Barrett, F.E.S., Members of Council. Mr. Billups then read his Presidential Address.

February 13*th*, 1890.—J. T. CARRINGTON, Esq., F.L.S., President, in the Chair.

Mr. C. G. Barrett exhibited a long series of *Phycis adornatella*, Tr., and *subornatella*; and made remarks thereon.* Mr. Barrett, on behalf of Mr. Vivian, also exhibited *Homœsoma sinuella*, Fb., and a variety of *Hesperia lineola*, Ochs., taken along with *H. Thaumas*, Huf., in Cambridgeshire. Mr. Moore, a collection of *Lepidoptera*, *Coleoptera*, &c., from the coast of Labrador, among which was a specimen of *Polyommatus Phlæas*, L. Mr. Lewcock exhibited larvæ and perfect insect of *Mesium affine*, Boied. The President made some suggestions for the year.

February 27*th*, 1890.—The President in the Chair.

Messrs. W. Smith, of Paisley, W. Bloomfield, of Mildmay Park, and G. A. Farini, of Forest Hill, were elected Members.

Mr. Bloomfield exhibited two specimens of *Hesperia lineola*, Ochs., taken in Essex, 1888. Mr. Watson, a nest of a species of Mantis, with two living exampl[illegible]s of the insect, many others had emerged in its transit from Sydney, where the species was said to occur freely. Mr. Billups, *Meopus trispinosus*, Wat., from New Zealand; *Poropleura monstrosa*, Olivr., from Brazil, and read notes relative to his exhibit. Mr. Billups also showed galls collected at West Cliff, Colorado, by Mr. Cockerell, who wrote that the rose-galls were of three species:—*Rhodites ignata*, Osten-Sacken, from which an abundance of a parasitic Cynipid, *Perichistus pirata*, Osten-Sacken, would be bred, *Rhodites fusiformis*, new species, and the little blister-like galls on the leaves would produce *Rhodites rosæfoliæ*, Cockerell; of the willow-galls, the reddish-fusiform ones produced *Cecidomyia salicis-siliqua*, Walsh: the bred galls were those of *Cecidomyia salicis-strobiloides*, Osten-Sacken. An exhibition of microscopical objects was then given, Messrs. Collins, W. West, R. Adkin, T. R. Billups, Cameron and others assisting.

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* *cf. ante*, pp. 20 and 92.—EDS.

March 13th, 1890.—The President in the Chair.

Messrs. A. E. Peake, of Tooting, and E. W. Sinclair-Cox, of the Temple, were elected Members.

Mr. Tutt exhibited typical specimens of *Agrotis obelisca*, Hb., from Germany, the var. *hastifera*, Donz., from Hungary, and some picked specimens captured by Mr. A. J. Hodges in the Isle of Wight, of a different type to var. *hastifera*, but much nearer that than the typical *obelisca*. Mr. R. Adkin, a series of *Mania typica*, L., and said that the larvæ were found last autumn, fed up in a warm room, the majority of them pupated in November, the imagines appearing in January and February of the present year; he had found a similar method of forcing the larvæ of some of the *Triphæna* that he had tried equally successful, and he believed that many other species of *Noctuæ*, whose larvæ hibernated, might be similarly treated with good results. Mr. Gerrard exhibited living larvæ and pupæ, with set examples of the imagines, of a species of *Ephestia*, which were discovered in old samples of rice. Mr. Mansbridge showed living larvæ and imagines of a species of *Tineæ* found feeding in samples of fish-guano, and said that the guano was brought from Brettesnaes, on the N.W. coast of Norway; the larvæ inhabited a kind of tube or gallery, which was formed with particles of the food united with silk; the larvæ, before changing into pupæ, worked their way upwards and pupated just below the surface. Mr. West (Greenwich), a collection of *Coleoptera* from the Columbian Republic. Mr. Billups, a specimen of *Ichneumon Haglundi*, Holmg., a species new to Britain, bred by Mr. R. Adkin, from a larva of *Arctia fuliginosa*, received from Scotland; a series of *Apanteles emarginatus*, Nees, bred from *Gracilaria omissella*, by Mr. Elisha; a specimen of an Hemipteron, taken alive in the Borough Market from a packet of bananas from the West Indies; a species of *Chrysomelidæ* found alive in a barrel of grapes from Malaga; and a living female specimen of *Bombus Latreillellus*, Kirby, found among lettuce from the South of France.—H. W. Barker, *Hon. Sec.*

Entomological Society of London: *March 5th*, 1890.—Henry J. Elwes, Esq., F.L.S, Vice-President, in the Chair.

Mr. G. H. Kenrick, of Edgbaston, Birmingham, and the Right Hon. Lord Rendlesham, of Rendlesham Hall, Woodbridge, Suffolk, were elected Fellows.

Mr. C. G. Barrett exhibited a number of specimens of *Dianthœcia carpophaga*, Bork., bred by Mr. W. F. H. Blandford from larvæ collected near Tenby, Pembrokeshire, on flowers of *Silene maritima*. He remarked that the series included a number of forms intermediate between *D. carpophaga* and *D. capsophila*, and established the fact that the latter is only a local variety of the former. Mr. Barrett further exhibited a specimen of *Dianthœcia luteago*, var. *Barrettii*, Db., also bred by Mr. Blandford from a larva found at Tenby;* also a long series of forms intermediate between *Catoptria Scopoliana*, Hw., and its small variety *parvulana*, Wilk.;† also a specimen of *Botys mutualis*, Zell.—a species widely distributed in Asia and Africa,—taken by Mr. C. S. Gregson, near Bolton, Lancashire.

Mr. A. F. Griffith exhibited and made remarks on the following:—two specimens of *Myelois Pryerella*, taken in the London Docks in 1888, and, for comparison, a series of *M. ceratoniæ*; two specimens of *Penthina Grevillana*, and a series of *P. prælongana*, taken in Sutherlandshire, and, for comparison, a series of *P. sauciana*, var. *Staintoniana*; one specimen of *Incurvaria tenuicornis*, and four of *Nemophora pilella*; three specimens of *Ornix fagivora* from Cambridge, two from Sutherland, and other *Micro-Lepidoptera*.

Mr. H. Goss exhibited several abnormal specimens of *Arctia Caja*, bred last December. The object of the exhibition was to show the effect produced by forcing the larvæ, and subjecting them to unusual conditions. It was stated that the peculiarity of the colour of the hind-wings of the female parent had not been transmitted to any of the offspring.

Mr. Blandford referred to two specimens of a species of *Cardiophorus*, from Tenby, which he had exhibited at the August meeting of the Society as *Cardiophorus cinereus*, and stated that subsequent investigation had led him to hand them to Mr. Champion for determination. Mr. Champion was of opinion that they did not belong to the same species; that one of them was *C. asellus*, Er., and the other, probably, *C. equiseti*, Hbst., a species new to this country.

Mr. C. J. Gahan read a paper, entitled, "New Longicornia from Africa and Madagascar."

Mr. Elwes read a paper, entitled, "On a new species of *Thymara* and other species allied to *Himantopterus fuscinervis*, Wesmael." Mr. McLachlan made some remarks on the subject, in connection with an examination and drawings of the type of *Himantopterus* made some years ago.

Dr. Sharp read a paper, entitled, "On some Water Beetles from Ceylon."

Mr. J. J. Walker communicated a paper, entitled, "Notes on *Lepidoptera* from the Region of the Straits of Gibraltar." Mr. F. Merrifield, Mr. B. G. Nevinson, Mr. Elwes, and Mr. G. Lewis took part in the discussion which ensued.

It was announced that papers had also been received from Mr. E. Meyrick, Prof. Westwood, and Mynheer P. C. T. Snellen, but in consequence of the lateness of the hour, the reading of them was postponed to the next meeting.—H. Goss, *Hon. Sec.*

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* *cf. ante*, p. 92.—Eds. † *cf. ante*, p. 70.—Eds.

ON THE TRUE AFFINITIES OF THE HETEROMEROUS GENUS *LAGRIOIDA*, FAIRMAIRE AND GERMAIN.

BY G. C. CHAMPION, F.Z.S.

Amongst the numerous interesting *Coleoptera* captured by Mr. J. J. Walker, R.N., F.L.S., on the coast of Chile, during the cruise of H. M. S. "Kingfisher," are several examples of a *Lagrioida* (*obscurella*, Fairm. and Germ.), which he found under plants on the dunes at Coquimbo and Valparaiso, under similar circumstances to those mentioned by Fairmaire and Germain in their original record. This genus, based upon two species (*L. rufula* and *L. obscurella*), found in company at San Antonio, Chile, was referred by its authors, without comment, to the *Lagriidæ* (*cf.* Ann. Soc. Ent. Fr., 1863, p. 234); and a third species (*L. Brounii*), from Tairua, New Zealand, has been subsequently added to it by Pascoe (Ann. & Mag. Nat. Hist., 4th ser., xviii, p. 58). This position is also adopted by Pascoe (*loc. cit.*) and Philippi (Cat. Col. Chile, p. 125); but in Mr. F. Bates's collection, *Lagrioida* (not *Lagrioda*, as written by Pascoe) is separated from the *Lagriidæ* and labelled as possibly belonging to the *Œdemeridæ*.

Having recently studied most of the genera of the *Lagriidæ*, the affinity of *Lagrioida* with this family seemed to me to be more than doubtful; and, after examining the typical examples of *L. rufula* and *L. obscurella* in Mr. F. Bates's collection and those obtained by Mr. Walker, I can only come to the conclusion that it is erroneously so placed. The anterior coxæ are conical, strongly exserted, and contiguous, the cavities widely open behind; the middle coxæ are very narrowly separated by the mesosternum, moderately prominent, and have a distinct trochantin; the hind coxæ are separated by the moderately broad triangular process of the basal segment of the abdomen, the metasternum having a very sharply cut deep notch for its reception. The head is short, broad, as wide as the prothorax, flattened between the eyes, and without the slightest trace of a transverse groove in front; the eyes are very coarsely granulated, oval, and entire; the mandibles are feebly bifid; the mentum is trapezoidal, twice as broad as long, and truncate in front; the membranous ligula is largely developed (but does not extend laterally so far as the mentum), broadly and very shallowly emarginate in front; the labial palpi (described by Fairmaire and Germain as "extrêmement courts et petits, à peine distincts; dernier article attenué") have their second joint much thickened towards the apex, the apex very obliquely truncate, and the apical joint slender, elongate-oval, the apex truncate; the apical joint of the maxillary palpi is large and subsecuriform; the tibial spurs are short but well developed; the penultimate joint of the tarsi is furnished with a long lobe on each side, these lobes only united at the base; the first joint of the hind tarsi is not quite so long as the other joints united; the tarsal claws are slender and simple; the prothorax is subcylindrical, immarginate laterally, and without trace of basal foveæ; the elytra are rather convex, nearly twice as wide as the prothorax, widest about the middle, confusedly punctured, without trace of striæ; the body is winged. In all the species the upper and under-surfaces are very closely and coarsely punctured, and thickly clothed with coarse decumbent pubescence.

In the widely open and contiguous anterior coxal cavities (a character overlooked by its describers), *Lagrioida* departs widely from the *Lagriidæ*; and the only other families of the *Heteromera* to which it is at all nearly allied are the *Melandryidæ* and *Œdemeridæ*. It agrees, however, very much better with the *Melandryidæ*; and it might well be placed in this family in the vicinity of *Eurypus*, Kirby, and several allied genera recently described by myself, *e.g.*, *Conomorphus*, *Physcius*, *Thisias*, &c. In their habits, the members of the genus more nearly resemble certain *Tenebrionidæ*, *Œdemeridæ*, and *Anthicidæ*. It is possible, however, that, like many *Œdemeridæ*, they are attracted by the flowers of the plants (*Mesembryanthemum*) beneath which they are found; the New Zealand *L. Brounii* is recorded as having been captured under a log on the sea shore. In addition to the three species above mentioned, examples of another, apparently undescribed, from King George's Sound, West Australia, are contained in Mr. F. Bates's collection. *Lagrioida*, in its geographical distribution, shows an affinity between the Coleopterous fauna of Chile and that of New Zealand or Australia; and I believe other cases of this kind have already been recorded.

11, Caldervale Road, Clapham, S.W.:
March, 1890.

Rhopalobrachium clavipes, Boh., at Gray Harbour, Straits of Magellan.—Two examples of this remarkable insect were captured by Mr. J. J. Walker at Gray Harbour during the cruise of H. M. S. "Kingfisher." The locality given by Boheman (Kongl. Svenska Freg. Eug. Resa, Ins., p. 110) is Port Famine; Philippi (Cat. Col. Chile, p. 132) gives a very much more northern habitat for it, viz., Reloncavi, Patagonia. The species has been very fully re-described and figured by Philippi (Stett. ent. Zeit., 1866, p. 111, t. 2, f. 5).—G. C. Champion, 11, Caldervale Road, Clapham, S.W.: *March*, 1890.

Cryptohypnus algidus, Sahlb., in the Dovrefjeld.—I am much indebted to Dr. E. Bergroth, of Helsingfors, for the following communication:—"In your notes on the *Coleoptera* of Norway (*ante*, pp. 72—77) you mention (*loc. cit.*, p. 75) a species of *Cryptohypnus* which you have been unable to identify. This is evidently referable to *C. algidus*, J. Sahlb. [Medd. Soc. Faun. Fl. Fenn., ix, p. 98 (1883)], described from specimens from Lapland and Siberia, and previously also found in Norway on the Jotunfjeld at an elevation of 4500 feet." As the ninth volume of this publication has not yet been noticed in the Zoological Record, it is perhaps not to be wondered at that Sahlberg's paper on *C. algidus* was overlooked by me.—Id.

***Berosus* (*Enoplurus*) *spinosus*, *Stev.*, *and B. guttalis*, *Rey*.**—M. Albert Fauvel, of Caen, has recently called my attention to a short note of his on these species [Revue d'Ent., viii, p. 335 (1889)], at the same time sending me a male example of *B. guttalis*, Rey, for comparison with British examples of *B. spinosus*, Stev. As it appears probable that both may eventually be found in this country, an extract from M. Fauvel's note will probably be of interest to British Coleopterists :—

Abdomen velvety-felted, alutaceous ; labrum blackish ; 2nd interstice of the elytra uniseriate ; ♂ 5th (ventral) segment simple ; ♀ dull, the sutural angle divaricate and arched without ....*spinosus*, Steven, Kuwert, Rey.
(*fulvus*, Kuw.).

Abdomen punctured, not felted, rather brilliant ; labrum testaceous ; 2nd interstice of the elytra confusedly punctured ; ♂ 5th (ventral) segment bidentate (échancré-bidenté) at the apex ; ♀ shining, the sutural angle and its spine convergent (somewhat crossed, when the elytra are quite closed)......
guttalis, Rey.
(*spinosus*, Heer, Duval).

All my British examples are from the Isle of Sheppey (found in abundance in brackish ditches by myself in 187[illegible]), and are undoubtedly referable to *B. spinosus*, Stev. The males of *Berosus*, it may be mentioned, are easily distinguishable from the females by the anterior tarsi having their second and third joints thickened. The bituberculate hind margin of the 5th ventral segment of the male of *B. guttalis* seems to be a good distinguishing character, and one that is not present in the male examples I have examined of *B. spinosus* (from the Isle of Sheppey and from Salonica, Turkey) ; the labrum is constantly dark or piceous in *B. spinosus*. In the latter the 2nd elytral interstice is irregularly uniseriate ; in *B. guttalis* (at least, in the example communicated by M. Fauvel) the punctures are very much more numerous, forming two irregular rows.

B. spinosus is stated by M. Fauvel to occur in brackish water, *B. guttalis* in both fresh and brackish water ; the two species are widely distributed on the continent—*B. spinosus* even extending to the Caucasus and to the Mediterranean region, *B. guttalis* occurring in inland as well as in maritime districts. *B. guttalis* is very fully described by Rey [Rev. d'Ent., ii, p. 88 (1883), and Ann. Soc. Linn. de Lyon, xxxi, p. 340 (1885)], and its differences from *B. bispina*, Reiche, and *B. spinosus*, Stev., noted ; Rey (*loc. cit.*) states that it occurs in fresh water, and that he found examples of it at Milhaud, near Nimes, in a pool, about the carcase of a dog.

In the Rev. W. W. Fowler's work on the British *Coleoptera* (i, p. 229), *B. spinosus*, Stev., is described as having the head entirely, or almost entirely, testaceous (this is presumably intended as exclusive of the labrum), and the sculpture of the ventral surface (as well as the sexual difference in the form of the male tarsi in *Berosus*) is not mentioned ; the description is, however, amply sufficient to distinguish *B. spinosus* from the other British species. The unarmed fifth ventral segment (in the male) is noted by Cox, Handbook Coleopt., Gt. Brit. and Ireland, i, p, 132.—Id.

THE GENUS *SCOPARIA.*

BY C. A. BRIGGS, F.E.S.

The difference between Mr. E. R. Bankes and myself as to the identity of *S. ambigualis* and *S. atomalis* really seems to be a question of what constitutes "proof."

In 1885 inspection of a fair series of both so-called species, aided by Dr. Buchanan White's note, led me to feel pretty certain of their identity. In January, 1889, comparison of a large number of specimens from various localities, including specimens from Howth, Cumberland, and Herefordshire, from Sussex, Surrey, Kent, and Isle of Wight in the south, from Rannoch and Argyllshire in the north, and island forms from the Sound of Jura, Arran, Hoy and Unst, ripened this into the absolute conviction I expressed (Ent., xxii, p. 16) ; but as I did not for a moment presume that my opinion alone was sufficient to justify the assumption that the question was finally settled, I asked the assistance of Scottish Entomologists, feeling certain that as soon as the existence of the long range of intermediate forms was more generally known, few would be found to doubt their specific identity; and I asked this assistance not for the sake of confirming my already strongly expressed opinion, nor with the expectation of finding any cause to modify it, but in the hope of being able to get together a sufficient mass of evidence to bring home the like conviction to others.

In January, 1890, it would seem that a good series from Perthshire has, as was to be expected, convinced Mr. Bankes ; but beyond his acquisition of the series, he has adduced no proof, nor any new fact whatever to show why the question should be regarded as any more settled now than it was in January, 1889, or to justify his statement that *atomalis* must for the *future* lose its specific rank. The italics here and subsequently are mine.

To me it appears questionable how far the individual opinions of Mr. Bankes and myself, based entirely on the *appearance* of the insects, can be said to have settled the question satisfactorily or otherwise, and most certainly I never claimed to have done so; but it may be that when others who have studied the group express their views, a general consensus of opinion will enable us to consider the matter as proved. It would be far more satisfactory, however, if by breeding *from the egg* it could be shown whether, in a brood of so-called *atomalis*, any approached *ambigualis*, and *vice versâ.*

As regards *S. mercurella* and *S. cratægalis* the question is less easy, and knowing, as we all do, that which Mr. Bankes calls "the unparalleled range of variation both in colour and markings" of *mercurella*, and after Mr. Bankes' assertion (Ent. Mo. Mag., *ante* p. 8) that these species are in reality abundantly distinct, "*none of the numberless varieties of mercurella ever showing the peculiar characteristics of cratægella*," it is certainly astonishing to find that Mr. Bankes should so naively confess that after all the easiest way is by the eye alone. Here I quite agree with him. No doubt there are specimens which are perfectly easy to be picked out, but the difficulty lies not in the "types" of each so-called species, but in those intermediate specimens in which, as Mr. Bankes himself is forced to own, the differences he points out "become modified as the opposite extremes of variation are approached." Mr. Bankes, in introducing his table of the nine points of distinction, says, "in every instance I believe that *several* of the points will be found to hold good." Bearing in mind his strong assertion, which I have previously referred to, will he not assist us by saying *which* these points are, or by even naming *one single point* which *always* holds good? The absence of the knowledge of any such point has hitherto been our stumbling block, and if Mr. Bankes will but remove it, he will render great assistance.

My own series of *mercurella* and *cratægella* consist at present of 138 specimens from very varied localities, but the more specimens I see the more I feel inclined to doubt whether the certain conviction of their non-identity which I used to feel some years ago is not erroneous. It is very probable that I am wrong in the suggestion that *cratægella* may be a chalk form, but I should like to hear from those who take it *commonly* whether it affects any particular soil, or whether it is as indifferent to soils as *mercurella*.

55, Lincoln's Inn Fields, W.C.:
April 15*th*, 1890.

DESCRIPTION OF THE LARVA OF *CATOCALA FRAXINI.*

BY G. T. PORRITT, F.L.S.

On the 2nd of July, 1886, I received two larvæ of *Catocala fraxini* from Mr. R. C. Ivy, of Southport. One of them was nearly adult, the other about half grown; the former I describe as follows:—

Length, nearly 3 inches, but slender in proportion. Head broader than the second, but a little narrower than the third, segment, flattened in front and slightly notched on the crown. Body of fairly uniform width, but segments 7, 8, 9 and 10 the widest; it is round above, but flat ventrally; there is a small hump at the back of the 9th segment, and a smaller ridge at the back of the 12th segment; segmental divisions clearly defined; skin smooth and without hairs dorsally, but there is a row of tolerably dense short hairs pointing downwards below the spiracles, dividing the dorsal from the ventral area.

The ground of the dorsal area is putty colour, with strong greenish tinge, and freckled, particularly at the hinder part of each segment, with minute brown dots; head pale pink, surrounded at the back with a conspicuous band of dark damson-plum colour, this band narrows off to a point on each side the face, the upper part of the face is also reticulated with this colour, but towards the mandibles are several dark brown streaks, whilst on each mandible, and also on each side, is a dark brown spot; dorsal stripe very narrow, green; spiracles oblong-oval, black, encircled with greyish-white; the hump on the 9th segment is darker than the ground colour, the dark colour extending backwards, and forming a somewhat horseshoe-shaped mark; the back of the ridge on the 12th segment is also of this dark colour; segmental divisions of the same pink colour as the head.

Ventral surface very pale greenish-white, with a large and conspicuous, nearly triangular, almost black mark on segments 7, 8, 9, 10 and 11, and there are paler, more rust coloured marks on the centre of segments 3 and 4; legs and prolegs of the same colour as the ground of the ventral area, the anterior ones being tinged on the outside with pink; hairs greyish-white.

In the half-grown larva the head is considerably wider than any of the following segments, and the colours generally are of a darker shade all through. The head is of a darker pink, but this colour is nearly lost in the broad, dull, black band at the back, and the greater amount of equally dark reticulation on the face; the ground on the dorsal area is much browner, and the narrow dorsal line is almost black; the tubercles, which are not noticeable in the adult larva, are distinct, ochreous-yellow; the spiracles are not so dark, and consequently much less conspicuous; whilst the ventral surface is pinkish-grey, and the outside of both anterior legs and prolegs, together with the hairs, pink.

The species feeds on ash and poplar, and both young and adult larvæ rest at full length on the twigs or small branches; the six anterior legs, and the prolegs on the 9th, 10th and ventral segments, which are larger than the others, are spread out from the body, and give the larva a very sprawling appearance.

Both larvæ spun loose cocoons among the dead leaves, &c., at the bottom of their cage, and changed to ordinary shaped pupæ of a purple-plum colour, powdered with greyish as a ripe plum also is.

The moths, two fine specimens, emerged August 23rd and 26th respectively.

Huddersfield: *January 8th*, 1890.

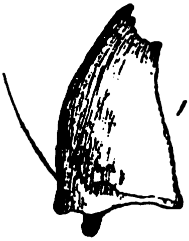
NOTES ON THE METAMORPHOSES OF BRITISH *LEPTOCERIDÆ* (No. 1).

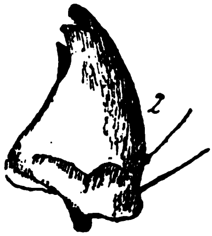
BY KENNETH J. MORTON.

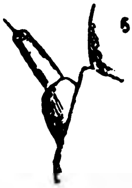
In the following series of notes are given, in part, the results of studies made during the past few years on the development of the British species of *Trichoptera*. While I have not neglected the other families, the *Leptoceridæ*, on account of the beauty and graceful forms of the perfect insects, have been my favourites, and I have had most success in rearing from the larva within the limits of that family. In addition to the materials amassed by myself, I owe to the kind communications of Prof. Franz Klapálek of Prague, an acquaintance with the preparatory states of several interesting forms which, although found in this country, have not occurred to me personally.

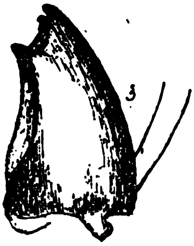
It is my intention in the meantime to give full descriptions (with some figures) of the larva, nymph, and case of at least one species out of each of the Sections adopted by Mr. McLachlan, an idea which may afterwards be extended so as to include, as far as possible, representatives of all the British genera.

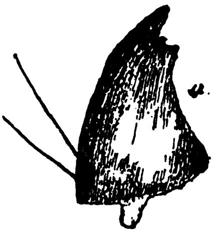
A few words with regard to the figures. It must be borne in mind that the appearance of the mouth parts varies greatly according to the extent of exsertion, and the point of view from which they are seen. It is usually difficult to get a good view of the labrum of the larva *in sitú*, on account of its often nearly vertical position (the

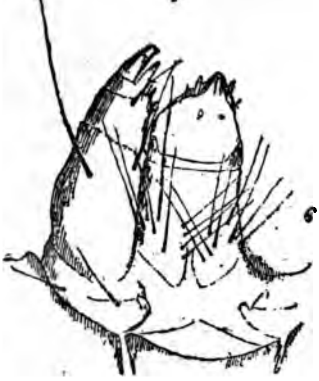












same holds good in a less degree with regard to that of the nymph); my figures of that part have accordingly been made from examples dissected out. The mandibles are notoriously difficult to delineate in a satisfactory way; they are asymmetrical to begin with, and each one presents a new form with every change of position, however slight: isolated figures taken from different species and from different points of view are therefore of no use for comparative purposes. My figures of mandibles are almost all drawn from heads mounted in balsam, and represent these organs nearly *in sitú*, as seen from above and below; in some instances their position may have been slightly altered by pressure—the only difficulty experienced in carrying out the principle of uniformity which I have indicated as so desirable. The strong hairs which are so prominent on some of the mouth parts appear to be constant as to number, but they cannot be relied on much, because they are easily lost, and few specimens can be found which do not show cicatrices or traces of detached hairs.

Further general remarks are reserved to the end of the series.

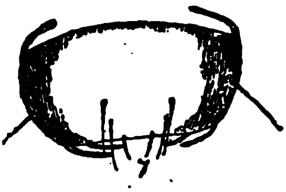
The first Section to be noticed is that of *Molanna*, containing the single genus *Molanna*, of which two species are found in Britain, *M. angustata* and *M. palpata*. The latter insect occurs commonly in the North of Scotland, but, so far, nothing has been ascertained about its earlier states.

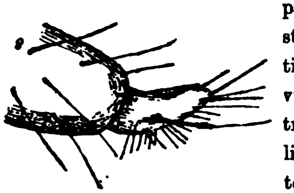
1.—MOLANNA ANGUSTATA, Curt.

Larva elongate; head small, long-oval; prothorax small, transverse, little broader than the head; meso- and metathorax both large, sub-quadrate, each broader than the segment preceding it. First abdominal segment broader than the metathorax, and almost as broad as any of the succeeding segments; the abdomen, which is rather compressed dorso-ventrally, is moderately large, and tapers very slightly towards the extremity, only the last segment being conspicuously narrower.

Head above with a limited number of long hairs; clypeus comparatively broad; "triangular" piece large and broad; antennæ placed on a rounded base, long, cylindrical, terminating in a hair. Labrum transverse, convex; foré-margin with two slender processes arising from the middle, and two long, blunt, inturned processes on either side; four discal and two lateral hairs; and on under-side six adpressed spines arranged in two rows towards the lateral margins, the points of the spines being turned inwards. Mandibles elongate (see figs.). Maxillæ with the basal part elongate; blade small, tapering; seen from above, with a few spines; palpi tapering, 3-jointed, second joint longest. Labium long, conical, numerous hairs beneath; palpi small, apparently 2-jointed.

Prothoracic plate slightly excised in front, rounded behind, and indistinctly *bilobed*. *Mesonotum* subquadrate, the hind angles not sharply defined; the middle





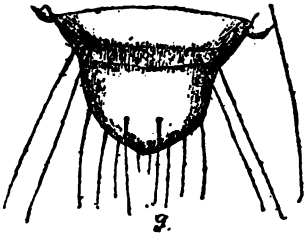
part being colored stands out distinctly, and is divided into two by a transverse curved line, and its anterior part again subdivided by a line running lengthwise. Metanotum without anything which can be called a plate ; it appears hardly to differ at all in texture from the abdominal segments, and bears two minute black dots and a discoloured patch. All the thoracic segments have a few long hairs, those above the attachment of the legs being gathered together into small groups.

The first two pairs of legs have the femora and tibiæ dilated, and the inner side of the tibiæ and tarsi, and the under margin of the femora, armed with spines ; the distal end of the tibiæ produced in the first pair into a long, and in the second pair into a short, process, each process being further produced into a long spine ; tarsal claws long, each with the usual basal spine. The posterior legs are very slender, the tibiæ apparently two-jointed, there being an obscure suture a little before the middle ; the distal end of the tarsi in these legs is rounded, and the claw is very small and short, beset with long and short hairs (this claw is practically aborted). The pairs bear to one another the proportions of about 8½ : 10¼ : 13. The hairs on all the legs are very long and numerous.

Abdomen : first segment has the usual dorsal protuberance ; the lateral protuberances might almost be termed with more propriety "ventral" from their position. The lateral line runs from the third to the seventh segment inclusive in a dense fringe ; on the eighth segment its character changes to a series of regularly placed round dots, whence arise longish hairs, two from each dot. Last segment above with the hind margin rounded, and bearing a row of long hairs (five or so) and a few shorter ones ; anterior to these hairs is a partially hardened plate bearing some spines or spinulose hairs. The anal limbs are broad and strong (if 2-jointed the sutures are obscure) ; above they are beset with spines and margined with long hairs ; the claws are articulated to the under-side, and are pretty long, terminating in two hooks, of which one is much larger than the other. (A line of microscopic sharp points is sometimes visible along the posterior outline of the anal limbs, but I cannot determine its precise position).

The slender filamentose branchial tracheæ are placed on the anterior part of the segments in fascicles, of apparently rarely more than four threads. Above the lateral line they occur on segments one to eight inclusive ; in the first four segments the bundles have usually four filaments, in the remainder three. Beneath, the filaments seem to occur only on segments two to seven inclusive in two rows, which may be termed latero-ventral and ventral ; the first is the smaller series, with two filaments on the second and third segments, one filament on segments four to seven ; in the second series usually with three filaments on all the segments.

Colours and markings : head and thoracic segments yellowish. Head with two broad black lines running along the entire length and converging behind ; prothorax closely clouded with dark fuscous in its posterior part, and with a black hind margin. Mesonotal plate closely dotted, and clouded with fuscous. The pieces to which the legs are attached are marked with dark, and so are the ends of the joints and the tarsal claws. Anal plate and limbs also darker. As all the material seen by me has been in alcohol, it is difficult to be exact as regards colour.



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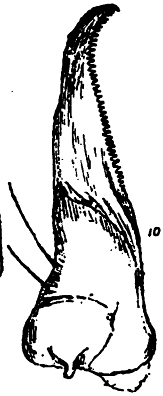

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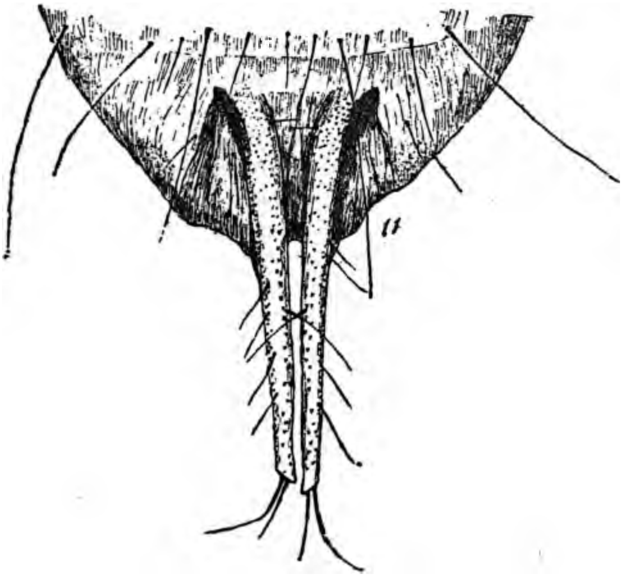
Nymph moderately slender, subcylindrical, the strong fringe on the abdomen helping to give a somewhat flattened aspect to it.

Head straight in front when viewed from above; antennæ (in the ♂ at least) a little longer than the body, but not wound round the abdomen. The labium and mandibles protrude; the former shield-shape, with numerous hairs; the latter long and falcate, with deeply cut teeth; the maxillary palpi curved inwards, first two joints short, subequal, the last three long and tapering. Labial palpi have the three joints gradually increasing in length and decreasing in thickness.

Mesothorax robust, with trapezoidal scutellum; metathorax has a similar but smaller scutellum. Wing-cases reaching end of fifth segment; upper pair blunt, lower more acute. Tarsi of all the legs fringed, median pair most strongly so.



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Abdomen with dense fringe running from third and meeting below eighth segment. The middle of the 1st segment above with a raised curved line; the posterior angles and part of posterior margin covered with sharp points. The third to sixth segments inclusive, above, each with two anterior, nearly circular, small plates, bearing from two to four backward-directed hooks; the fifth segment has in addition two posterior transverse plates, with four or five forward-directed hooks.

The branchial tracheæ occur on the pleuræ above and below the lateral line; above on the second to eighth segments in bundles of about four filaments on the anterior, and three filaments on the posterior, segments; below they are similar, but apparently absent from the eighth segment. As in the larva, the filaments are placed on the anterior part of the segments.

The ninth segment is smallest, somewhat rounded posteriorly; from its dorsal surface arise the appendages, which are of considerable length (about as long as the segment); they are closely approximated, and seen from the side are broad, at first descendent, then a little upturned towards the tips, which bear two unequally long bristles; above they bear several long hairs and an irregular row of minute teeth, together with numerous small sharp points, which are most thickly set near the base. On the under-side of the segment are two lobes, whose apices are turned inwards.

The remarkable dwellings made by the larvæ of *M. angustata* have been long known, and are figured and described by De Geer. Seen from above the case is convex, usually very broad in the anterior part, and narrowing in varying degrees towards the posterior extremity; it is composed of sand-grains, and is moderately smooth along the middle ridge, whereas the side parts are usually loaded with larger stony fragments. Beneath there is visible a tube, slightly tapering and not unlike the cases made by many *Leptoceridæ*, only it is decidedly compressed, so that a transverse section is more or less oval; this tube lies, as it were, in a shallow receptacle, whose sides and fronts usually project far beyond the limits of the tube. In the smaller cases this anterior projecting part is most prominent, and in these also the hind extremity of the tube, seen from beneath, is rounded, the vent apparently being on the upper surface. In the larger cases (probably those whose inmates are about to "spin up") the anterior projection is often nearly absent (but the whole case is very brittle and liable to breakage); and behind, the broad parts are produced, and bent in the form of a hood over the end of the tube, the vent of which is placed on the under-side, and consists of a very long slit, whose direction is in the same plane as the long axis of the case. When the case is viewed from the side it appears slightly curved.

The cases before me vary in length from 16 to 22 mm.; the greatest breadth is 10 mm., and in the same case the diameter of the tube is 4 mm. at the mouth. The anterior part projects most (4 mm.) in a case whose centre length is 16 mm.

EXPLANATION OF FIGURES.

1. Left mandible from above.
2. Right do. do.
3. Left do. from beneath.
4. Right do. do.
5. Antenna.
6. Labium and maxillæ.
7. Labrum.
8. Tarsal claw of posterior leg.

ALL OF LARVA.

9. Labrum of nymph.
10. Right mandible of nymph from beneath.
11. Apex of abdomen of nymph, from above.

All the figures drawn with a Zeiss A objective, with the exception of 5 and 8, which are drawn with C.

Carluke, N.B.: *March*, 1890.

NOTE ON THE GENUS *CARIDOPHTHALMUS*, ASSM.

BY E. BERGROTH, M.D.

In the "Amtlicher Bericht der 50 Versammlung deutscher Naturforscher und Aerzte in München, 1877," p. 191, Herr A. Assmann has described a remarkable new genus and species of *Pentatomidæ* from New Guinea, under the name of *Caridopthalmus sexspinosus*. From the description given it was not difficult to guess that this insect belonged to the anomalous genus *Allocotus*, Mayr, and this conjecture I find to be correct, after having received from the author a more complete description and a drawing of the species. It is well distinguished from the other three species hitherto known, being structurally allied to *A. Sayeri*, Dist., but in colour more resembling *A. Mayri*, Sign. As to the generic name, that proposed by Herr Assmann must stand, *Allocotus* being pre-occupied. New Guinea and the adjacent islands seem to be the proper home of this genus. Mr. Distant speaks of "the Australian *A. Rogenhoferi*, Mayr," but no species of the genus have been found in Australia, the species of Mayr being described from Timor. As the description in the "Amtlicher Bericht" is very succinct, and almost inaccessible to Entomologists, I think it useful to give a reproduction of the complete description forwarded to me by Herr Assmann.

"Length, 5½ mm., breadth, 3½ mm. Head, ⅓ mm. long, 1¼ mm. broad; the sinuated broad front bears two straight, porrect, acute spines of ⅓ mm. length. The eyes are inserted on a comparatively thick cylindrical process, which is directed forwards and outwards. On the under-side between the spines and the ocular processes the antennæ are inserted. The 1st joint is short and thick, and only little projecting between the two processes on each side; the 2nd joint is stout, cylindrical, 1 mm. long; the 3rd joint is the longest, 3 mm., and has scarcely half the the thickness of the 2nd joint; the 4th joint is as thin as the 3rd, 2 mm. long; the 5th, 1½ mm. long, somewhat thicker, rounded at the apex. Thorax 2 mm. long, in the front as broad as the head, behind 3½ mm. broad; before the middle of the external margin is an almost horizontal, finely pubescent spine of 1 mm. length; more hindwards, at the greatest breadth of the thorax, is another spine, which is somewhat broad at the base, and has the tip curved back; between the two anterior spines is a tolerably stout transversal callosity, and the hind-margin of the thorax is likewise, but not so strongly, callous. Scutellum 2½ mm. long, and at the base nearly 2 mm. broad, obtusely acuminated at the apex. Corium, at the lateral margin, 3¼ mm., at the internal margin nearly 2½ mm. long, with the internal angle only little before the tip of the scutellum. Membrane exactly reaching the end of the abdomen, 2¾ mm. long, with six strongly elevated, somewhat curved, longitudinal veins. The fore and middle legs of the same length (the hind legs are wanting); coxæ short, femora a little beyond 2 mm. long, tibiæ thinner, 2 mm. long, tarsi with strong fastening *lobes, ¾ mm. long.* Sternum, head, thorax and scutellum coarsely punctured, corium and under-side of abdomen at the sides more finely punctured, the middle third of the venter smooth. Sternum blackish, faintly shining. Head, thorax and scutellum brownish-green, with a faint brassy shine. Corium more brownish-black, opaque; membrane black. Under-side of abdomen reddish-brown, smooth, the punctured sides blachish-brown. Antennæ dull brown, the base yellow. On each side of the thorax between the two spines, but more towards the middle of the disc, is an elevated, smooth, round, yellow spot; the anterior acute spines are reddish-yellow. In the basal angles of the scutellum is a hard, smooth and elevated yellow spot, extending obliquely backwards; from opposite the end of these two spots runs, in the middle of the scutellum, a very narrow, yellow, longitudinal line, which is dilated towards the apex of the scutellum, the whole of which it occupies. The lateral margin of the corium is narrowly bordered with yellow, and in the middle of the disc is a yellow longitudinal line, dilated towards its posterior end. Coxæ, trochanters, and the basal quarter of the femora bright yellow, the rest of the femora blackish-brown, tibiæ tawny, with the base and tip brownish, tarsi tawny."

Mayr, Signoret and Distant describe the antennæ as being four-jointed, Assmann as five-jointed. But it is evident that the first short and thick joint mentioned by Assmann is only the basal node of the antennæ.

Forssa, Finland: *March*, 1890.

NOTES ON *GRACILARIA POPULETORUM*, *ELONGELLA*, AND *FALCONIPENNELLA*.

BY JOHN H. WOOD, M.B.

These three *Gracilariæ* form part of a very natural group that is placed in the "Manual" at the head of the genus, and is characterized in the perfect insects by the presence of a costal triangle, and in the larvæ by being solitary in their habits, and living upon trees or shrubs, the leaves of which they mine in the first half of their existence, and fold or roll into chambers in the last half. In most of the members of the group the mine is compound, consisting partly of a very shallow and superficial gallery, which, from the inconspicuousness of the "frass," looks not unlike Dipterous work, and partly of a small *Lithocolletis*-like blotch. A point to be noticed about the chambers is, that the number which each species constructs is singularly invariable. In all but one of them there are two of these structures, so that, counting the mine, the larvæ may be said to have three distinct householdings, each householding, as I hope to show, being associated with a particular stage in the life of the insect. The form of the first chamber often varies much in the same species, and appears to depend chiefly upon the size and shape of the leaf, or upon the part at which the larva sets to work; but the form of the second or final chamber is on the contrary most constant, and affords a useful character for differentiating the species. The difficulties in the way of ascertaining some parts of their economy, and especially the relationship just alluded to between the larva and its domicile, were by no means slight, and in the case of the early or mining life could only be indirectly overcome, since opening a mine meant the death of the larva; but in the chamber-life the difficulties were not so insurmountable, and were indeed altogether mastered, when it struck me that it would be possible, by the insertion of a pin or two, to restore any chamber I had opened to its original form, and so prevail upon my larva to think that there was not much amiss after all with his house. Armed with this resource, I was able to open the chambers freely, till this part of their history was ascertained. I found that in each chamber the larva moulted once, and that the process was effected very soon, though not quite immediately after the chamber had been made; the larva, fatigued, as we may suppose, by its exertions, taking a good meal before laying up for the still more exhausting act of moulting. As a consequence, the chamber contained frass of two sizes, a small collection of small-sized "frass," and a large collection of large-sized. It then occurred to me that in the "frass" ought to lie the clue for discovering the number of moults that took place in the mine, and I found that by this way of reckoning there must be two, for on the floor of each mine were collections of two different-sized pellets, in addition to numerous minute particles adherent to the surface of the roof.

The order of events appears then to be as follows:—The larva on quitting the egg, and whilst having the big second segment possessed by so many blotch-mining larvæ, separates the cuticle to the full extent of the mine, leaving its frass, as it goes, upon the membrane; it then moults, and proceeds to feed upon the parenchyma, having already pretty nearly lost its burrowing form; it shortly moults a second time, and continues to occupy its quarters until the third moult is close at hand, when it leaves—whether the stock of food be exhausted or not—and makes its first chamber; here the moult is presently accomplished, and the larva remains browsing within till nearly ready for its fourth and final moult; this point reached, and often with much food still unconsumed, it goes foraging once more for new quarters, and having met with a leaf suitable for its purpose, it rolls it into the chamber proper to the species, where it contentedly remains till growth is finished.

So much for their habits. As for the larvæ, they are most provokingly alike, and, except in the colour of the head, afford no appreciable specific characters. Sluggish and disinclined to move as they appear to be when their chambers are opened, they really travel pretty quickly when in search of fresh quarters. After the loss of the burrowing form, which happens at the first change of skin, the larva is of ordinary shape, neither short nor long, with a large head as wide as the next segment, and a body of nearly equal width throughout. The skin is semi-transparent, allowing the intestinal contents, and sometimes even the tracheal threads, to be seen, and is of a whitish or greenish-white colour, without lines or spots. When full-fed, several of them, including our three species, turn a delicate green.

I will now take them individually.

G. populetorum.—It usually selects a young leaf for its mine, agreeing in this respect with its congeners. Sometimes the mine is on the upper-side, and sometimes upon the under-side. It is on a larger scale than in any of the other species, the gallery being long and rather wide, and the blotch large and open; it is also a more unshapely structure, and is extremely like a Dipterous mine, which also consists of a gallery and blotch, and is not uncommon in the birch leaves. The rva is careless of the fashion of its first chamber, at one time rolling up half a leaf whole one if small, at another simply folding over a piece of the edge, or it into a cone; but of the shape of its final chamber it is most particular, and proceeds by rolling up the leaf longitudinally, using a whole leaf for the purpose. Its head, with the exception of the brown mouth parts, is concolorous with the body till the last moult is reached, when it acquires either a very light brown shade, or two pairs of very pale grey streaks down the face. These streaks, of which the outer pair is the larger, are the common form of head-markings in the *Gracilaridæ*. In its mode of spinning up, the larva varies much. Generally, I think, it rolls up a leaf just as it does in making its final chamber, and pupates under the edge of the innermost roll; not unfrequently it never leaves the feeding chamber at all, but pupates, as in the former case, under the first roll; whilst, most seldom of all, it spins its cocoon just beneath the edge of a leaf without any rolling up, much as *G. falconipennella* does on alder. The pupa has a faint brown tinge down the back. Its name of *populetorum* seems to be a misnomer. Common as it is some years on the birch bushes in the Herefordshire Woods, I have not once seen it on aspen or poplar; and Mr. Stainton tells me that he hears from Germany that they breed it there *only* from *birch*.

G. elongella.—The larva is well known as the roller of the alder leaf. Its mine is situated on the upper surface of the leaf, near the margin. The gallery is long and narrow, and twists about until it meets with one of the ribs, down which it turns, the cuticle at the same time being separated for a short distance symmetrically on either side to form the small and narrow blotch; threads of silk are then spun across the roof from side to side, by the contraction of which the blotch is folded down the middle, and its sides drawn so close together that only a slight sulcus, or, at best, a pale linear mark remains visible on the upper surface; and as there is little or no distortion of the leaf to catch the eye, it is by no means an easy object to see. Once only have I known the mine to be situated in the middle of the leaf and near the foot-stalk, when the silk threads were powerless to draw the sides of the blotch together, and it had to remain flat and open. The first chamber varies in its shape, but the final one is invariably made by rolling the leaf longitudinally. It never spins up *in situ* like *populetorum*, nor does it make any attempt at concealment, but its oval, glistening, and membraneous cocoon is placed quite exposed on the under-side of a leaf and well away from the edge. The back of the pupa varies from a very pale brown to dark grey or smoky-black. In the colour of the larval head the process of development is quite different to what it is in *populetorum*. The head of the very young larva is smoky; it gets darker with age till it reaches its greatest intensity at the second moult, when it may be described as blackish; along with the increase of colour is its aggregation into the frontal streaks, the outer pair being for the present continuous with the blackish cheeks and under-parts; at the third moult the colour goes from the cheeks and under-parts, and only the streaks remain, but of a paler hue than before; finally, with the fourth moult, the streaks themselves disappear, and the head, except the mouth parts, is left concolorous with the body. This is the typical sequence, but I have noticed in specimens feeding very late in the autumn, long after the great bulk have spun up, or even emerged, that the colour is apt to be very much deeper, and never to be completely lost, so that in the last skin they have heads typical of the penultimate skin of ordinary larvæ.

Such is the life-history of *G. elongella* on alder, and it is seldom that exceptions in any of the main points occur. Out of some 60 or more specimens I have examined, I have only met with one instance where, the mine being on the upper-side, the blotch ran across instead of with the rib; whilst two or three times I have found a mine on the under-side of the leaf, which, no doubt, belonged to this insect, though the fact could not positively be ascertained, as in each instance the larva died.

Now, I find on birch a larva, which in its habits is the very antithesis of the one I have been describing, the rule in the one being the exception in the other, and *vice versâ*. The mine (a gallery and small blotch) is on the under-side of the birch leaf, very rarely on the upper-side, and if on the upper, the blotch does not take its bearings from a rib. The leaf is invariably rolled transversely, not longitudinally, the chamber being broadly triangular or cone-shaped. The larval head goes through the same changes as in the alder insect, but it is of a darker tint, and always, I believe, retains the frontal streaks after the last moult. The retention of the streaks appears here to be a natural character, and not to be due to colour-intensification from the effect of cold and retarded development, as it certainly is in the case of the alder larvæ found at the end of September and beginning of October. The cocoon does not differ in its form and situation from that of the alder insect, but the back of the pupa is smoky-black, and never, I think, shows the pale brown form the other does.

On two occasions finding an alder larva in its penultimate skin looking for a leaf for its final chamber, I have given it birch instead, but on neither occasion could it be prevailed on to use it; and after two days the attempt was given up and its natural food restored, when it set about its chamber at once. Here are grounds, sufficient it would seem, for the establishment of a new species, but, when we come to the perfect insects, the evidence is less satisfactory. It is true that the alder insect is usually without any red tint; that its costa is seldom yellow; and that a rather bright yellow costal triangle is never present, at least in any specimen I have bred—characters, one or other of which is almost always present in the birch insect. Yet, if a number are compared together, there will always be a few individuals that seem out of place in their own series, and as if they ought to be transferred to the other. Under these circumstances, it will be wiser, perhaps, not to multiply names, but to be content for the present with simply pointing out the possibility of our having two species confounded together under *G. elongella*.*

It may, perhaps, be as well to add, that it is quite easy to distinguish between the rolled leaves of thsee *Gracilariæ* and those of the *Tortrix*, *Phlæodes immundana*. The chambers of the *Gracilariæ* are more or less cone-shaped, that is, broader at one end than the other, whilst those of the *Tortrix*, whether on birch or alder, are cylindrical, and tightly rolled into a very small compass. The former insects merely browse the inner surface; the latter eats the whole thickness of the inner rolls, and only browses if food runs short, and it has to attack the outside roll.

G. falconipennella.—Little, I believe, was previously known about this larva. It lives upon alder, and is of extremely rare occurrence in my own district, but is to be found in small but constant numbers in a dingle on the western side of the county. It differs from its relative in having a simple mine, and three chambers instead of two. The mine is a small oval blotch, very like the mine of an *Ornix*, and lies on the under-side of the leaf, generally close to the edge. The three chambers are all alike, except in the matter of size, and are simple turnings-down of the edge of the leaf, like the chambers of *Ornix avellanella* on nut. The larva is undistinguishable from the birch form *elongella*. It spins up just under the edge of the leaf, curling it neatly over; and in this again it resembles an *Ornix*. The back of the pupa is more broadly and intensely black than in the darkest *elongella*.

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* Mr. Stainton has seen all my bred *G. elongella* (nearly forty specimens, pretty evenly divided between the two forms), and I cannot do better than give his opinion in his own words. He says:—"The *Gracilariæ*, from the food-plant and different larval habits, ought to be distinct, but I do not see where any character is to be found in the perfect insects, except in the greater redness of the birch species. In most of the alder specimens the total absence of *any red tinge is rather striking*.

"*The species* may be as distinct as *psi* and *tridens*, but yet quite as undistinguishable in the *perfect state*."

Before concluding, I ought, perhaps, to say that, though in dealing with the general history of the group, I have spoken as if acquainted with all the species, I have, in fact, no knowledge of the larva of *G. straminella*, which, however, is now considered by Mr. Stainton to be only a variety of *G. elongella*, nor of the larva of *G. hemidactylella*, a rare species, that appears not to have been taken of late years, and is supposed to feed on *Acer campestre*, or on *Acer pseudoplatanus*.

Tarrington, Ledbury:
March 18*th*, 1890.

Lepidoptera at Haslemere early in the summer of 1889.—The beginning of the past summer saw the realization of a long-desired and intended trip, a visit to my old and favourite locality, Haslemere, the main object being to search for that rare, if not lost, species, *Madopa salicalis*. The month of May was so hot that everything promised most favourably, but on the very night before my journey (the 26th) that whole district was visited by such a deluge of rain, that in the morning all the valleys were more or less flooded. The incessant downpour for about twenty hours apparently almost killed out all the species then on the wing. Consequently, I did not see a specimen of *Leucophasia sinapis*, which used to be common in the woods at that date, and *Minoa euphorbiata* and other species were only represented by casual washed-out specimens. Sunny weather soon followed and fresh things quickly appeared. *Tephrosia consonaria* was not uncommon on the large fir-trees—where, indeed, some of them had evidently sheltered from the storm—and although, with their usual perversity, they generally sat out of reach, they were quite amenable to the persuasion of a long switch of mountain ash, and came flitting down. With them, but lower down, *T. crepuscularia*, var. *biundularia* was common, and in fine condition. Among *Vaccinium myrtillus*, underneath, *Epione advenaria* flew about in the sunshine, or sat with wings nearly erect, like a little butterfly. *Capua ochraceana* and *Phoxopteryx myrtillana* were common among the *Vaccinium*, where also *Dasychira pudibunda* and *Odontopera bidentata* were to be found at rest. Just before I came away *Hypena crassalis* began to emerge: the males most lovely, from their velvety blackness, but they were wary, and from their habit on first emerging of sitting in shady places and hurrying into thickets and holly bushes when disturbed, very hard to secure. A few days later, they would doubtless have been more common, and would have taken to the tree trunks, where they are easily caught, but I could not wait.

In the lower woods *Nemeobius Lucina* was skipping about in the warm corners at the bottoms of dingles or at sheltered path sides, and close by—where the lovely "demoiselles" (*Calopteryx*) were sporting—was to be found the far more local *Osmylus chrysops*, flitting like a faint shadow under the bushes, quite within the deep bed of the rivulet. Here also among the blackthorn bushes the queer Orthopteron, *Blatta lapponica*, ran swiftly over the leaves and flitted from bush to bush; and a far more welcome prize turned out, a fine specimen of *Macrochila fasciellus*. On the slopes, *Botys pandalis* and *Argyrolepia Baumanniana* were not scarce, and the latter could be disturbed at all times in all the open parts of the woods, by no means restricting its flight to sunset, as is the habit of its allies. Among the aspens in the afternoon flew *Phoxopteryx lætana* (*ramana*) looking like a tiny snowflake, *P. diminutana* was among the sallows, where also, just before I left, occurred a single *Lobesia Servillana*; and *Penthina prælongana* and *Stigmonota Germarana (puncticostana)* occurred, also singly, among birch and oak respectively. Here *Catoptria Albersana* flew commonly, about sunset. Old isolated fir-trees furnished a few *Œcophora Panzerella* with, of course, *Macaria liturata* and *Retinia pinivorana*, and having been so long away from woods of this sort, I was even well-pleased again to see such ordinary species as *Acidalia candidata*, *Ephyra porata*, *Venilia maculata*, *Eupithecia satyrata*, and *Platypteryx lacertula*. The resemblance of a specimen of the last named, at rest upon a grass culm under a birch tree, to a brown and twisted leaf of birch was something wonderful. It must be seen to be fully appreciated.

All this while the principal object of search was not forgotten. The woods and coppices were ransacked for *Madopa salicalis*, undergrowth—sallow especially—thrashed and even trampled through, and long grass disturbed in every probable spot, but to no purpose, not a specimen was seen, and I greatly fear that it has died out from its old haunts. In one of these haunts a long search revealed nothing whatever except a female *Sesia fuciformis* laying her eggs on honeysuckle, but far too wary to be approached.—C. G. Barrett, London: 1890.

The unique specimen of Pyralis pictalis, Curtis.—One of the most interesting insects which we saw when at Liverpool was the original specimen of *Pyralis pictalis*, Curt., a fine and perfect specimen, agreeing accurately with the figures by Curtis and Noel Humphrey. It is in the collection of Mr. Robertson, who is mentioned by Curtis and others as its captor; the whole collection, which is of considerable interest, being carefully preserved by Mrs. Robertson. Mr. G. Robertson, her son, writes:—"My father died in 1853, and for several years before his death was unable to do anything in the way of collecting. *Pyralis pictalis* was found in a house near Poplar in July. My father lived in Limehouse, which adjoins Poplar. I remember that there was a small society which used to meet at each other's houses, but it was so small that I do not think any record was kept, but I recollect Messrs. Chant and Bentley as coming to the house."

This account of the moth is in agreement with that of Curtis and Westwood. *Pictalis* is recorded also by Guenée in his "Pyralites," on the authority of Mr. H. Doubleday; this specimen being the only one referred to, Guenée suggests that it is *in all probability* a native of the Indies, and places it between two species from *Central India*. The close proximity of Limehouse to the East India Docks, and the ease with which a larva belonging to this family of *Pyralites* might exist among dried vegetable substances on board a vessel gives colour to this opinion. It does not appear that any second example of this very pretty and distinct species has been recognised from any part of the world, and the existence in excellent preservation of this unique specimen, fifty years after its capture, is of genuine interest.

In Mr. Robertson's collection I also saw six *Œcophora formosella*, evidently the original specimens (called *Batia formosella*) taken by him at Wanstead. The utter disappearance of this lovely species, like that of *Œ. Woodiella*, is sufficiently mysterious.—Id.

Variation of Phycis dilutella, Hüb.—With regard to Mr. C. G. Barrett's very satisfactory paper on the identity of *Phycis subornatella* and *adornatella* (*ante* p. 20), I think that it will be found that Portland is not the only place that produces intermediate forms of this species. I have four specimens from Brighton, all sent to me as *subornatella*. In one of these the white basal fascia is almost, if not quite, as distinct as in an Isle of Man specimen sent me by Mr. Barrett, and the wing is much more suffused with white scales; in the other three specimens there is less white, especially on the hind margin, than in the Isle of Man specimen, and the basal fascia is almost obsolete in slightly varying degrees in the three specimens. It would probably not be noticed at all if we did not know of its existence in other specimens, but as we know where to look for it, some of its faint outline can be made out with difficulty. These three specimens are undoubtedly, I should say, of the *adornatella* variety, though they are not extreme forms. A long series from Brighton would probably show many other forms, but most likely the specimens taken both there and at Portland have for years gone by the name of *subornatella*, and the dark *adornatella* varieties have, I suppose, passed with them under the same name. I have three specimens from Shoreham, which are all distinct *adornatella*, but show some variation in the direction of *subornatella*. The most constant series I have is from North Devon—four specimens, very like each other, dingy ochreous, with a few white scales on the costa and hind margin, and no basal fascia. This form also occurs at Portland. With regard to Mr. Barrett's last paragraph but one, I may mention that I saw a specimen taken by Mr. C. W. Dale at Portland, very dark, with exceedingly long and narrow wings, more striking in that respect than any of the very variable graduated series I was able to send to Mr. Barrett last year, and which seemed to me to conclusively prove the identity of the two so-called species. I had never taken *dilutella* elsewhere, but as I was not satisfied about the Portland specimens, I sent a few varieties to Mr. Barrett in 1887, asking for his opinion on them, and he then said that they were more like *subornatella* than any *adornatella* he had seen, and that he thought that these two species might turn out to be identical.

There is one point in the differentiation by Zeller (Ent. Ann., 1867, p. 142) of *subornatella* from *adornatella* which is worth noticing. He there says that *subornatella* is distinguished from *ardornatella* by (amongst other things) the *slight* angles of the 2nd transverse line, whereas, in the specimen of *subornatella* from the Isle of Man above alluded to, these angles are particularly sharp and well-defined. By comparing other specimens, I see that the shape of this line is very variable, and cannot be relied upon as a distinguishing mark. I have not found the extreme light or dark forms at all common at Portland, and if this be the case in other localities, it may somewhat account for the fact that the two names had stood together in our lists for 22 years. It would be interesting to hear the experience of entomologists living at Brighton and other places where the insect occurs.—NELSON M. RICHARDSON, Montevideo, near Weymouth: *February*, 1890.

Lepidoptera in Armagh in 1889.—The following have not been previously recorded from this district:—*Pœcilocampa populi*, a ♂ flew into Derrynoose Rectory, and was duly captured for me, on November 15th; Derrynoose is about six miles from this, and at a considerably greater elevation. A ♀ emerged at the end of December, from pupa dug near here. *Agrotis suffusa*, *Phlogophora meticulosa*, *Noctua rubi*, *N. umbrosa*, *Anchocelis pistacina*, *Calymnia trapezina*, *Scoparia angustea*, and *Platyptilia gonodactyla*, were taken at sugar in my garden, at the end of August and early part of September. The first two, though such common species, I had never even seen here before, last year, however, they were very plentiful. *Leucania impura* I took in the Mullinures, hovering over grassy drains at dusk, in July. *Plusia iota* was captured in July at flowers in my garden. In a lane about half a mile from the town I captured at dusk, on June 27th, *Hadena adusta*, *Crambus selasellus*, *Sciaphila* (*Cnephasia*) *subjectana*, *S. virgaureana*, and *Swammerdamia griseocapitella*. There was a good deal of honeysuckle in flower in the hedges. *Zanclognatha grisealis*, *Eupithecia vulgata*, *E. absinthiata*, *E. rectangulata*, *Scoparia ambigualis*, *S. truncicolella*, *Tortrix ribeana*, *Dictyopteryx Bergmanniana*, *Penthina variegana*, *Pardia tripunctana*, *Sericoris rivulana*, *S. lacunana*, *Prays Curtisellus*, and *Plutella porrectella*, all occurred in my garden at dusk, in June and July. Of *Epione apiciaria*, one specimen was caught by Mrs. Johnson, on August 13th, in the evening, in the lane leading down to the Mullinures, and another was beaten out of a sallow bush on September 3rd, very much the worse for wear. Beating and sweeping through the long grass, &c., in the Mullinures, in the afternoons, produced, in May, *Stigmonota perlepidana*, *Cnephasia musculana*, and *Blabophanes rusticella*; in June, *Bactra lanceolana*, *Eupœcilia angustana*, *Tinea tapetzella*, *Crambus hortuellus*, *C. pratellus*, *Elachista nigrella*, and *E. cygnipennella*; in July, *Crambus perlellus*, *Swammerdamia spiniella*, *Bryotropha terrella*. In the evenings in the same locality I captured, in June, *Acidalia scutulata* and *Pelurga comitata*, and at the end of July, *Noctua umbrosa* and *Orthotænia antiquana*. *Eupithecia constrictata* I took along with *Tinea merdella* and *Scoparia ambigualis*, in the Folly, which is a kind of public park, with a good many trees in it, and a stream running through it. In the same place I took, on October 2nd, *Thera variata*; it was sitting on a blade of grass close to a fir tree. *Acentropus niveus* occurred at Coney Island, in Lough Neagh, on August 16th; I, unfortunately, only got one specimen. Beating the reeds and long grass on the edge of Lowry's Lough brought me *Crambus pascuellus*, *C. culmellus*, *Aphelia osseana*, Scop. (*pratana*, Hb.), *Catoptria fulvana*, and *C. ulicetana*. *Tortrix palleana*, Hb. (*icterana*, Fröl.), I knocked up out of grass in the Palace Demesne, on the afternoon of July 2nd; I only got a single specimen. *Amphisa Gerningana* I took on the heathy bog at *Churchill*, where I get *Selidosema plumaria* and *Cœnonympha Davus*. The *Peronea*

I took in the Mullinures by beating the hedges round about the meadows, and in the lane leading down to them, in the afternoons, from August 31st to September 18th. The hedges are composed mostly of hawthorn, with a mixture of blackthorn, hazel, and blackberry. My mode of proceeding was simple enough: I thrashed the hedges with the handle of my water net, and Mrs. Johnson and I caught everything that flew out, when we could, but these little *Peronea* had a most provoking way of fluttering down to the grass and hiding themselves at the roots, where, in most cases, they managed to successfully elude all search, though neither of us is at all blind. The most plentiful was *P. perplexana*. It occurred in all parts, but was most numerous where hawthorn predominated. I have 27 in my collection, and could have got many more if I had wished. The least plentiful was *P. comariana*, of which I only got three specimens. *P. Schalleriana* was next in paucity, and then *P. comparana*. *P. variegana* was plentiful enough, and varied greatly, one was beautifully suffused with white; I beat it mostly from hazel, and it was out of a great mass of hazels that I beat a beautiful dark blue var.; I also took this species at sugar in my garden. *P. aspersana* seemed most attached to blackberry. The Mullinures, where I got these little moths, lie very low. At one time, I believe, the site was occupied by a lake. There is very little fall from the spot, and, consequently, it is hard to drain. I do not think that it has ever been tilled, and the hay is of a very inferior quality, being much mixed with rushes. It is a capital spot for entomology, and has produced no end of good things.

Many of these species are so common, that I only enumerate them on account of the absence of records from this district.—W. F. Johnson, Winder Terrace, Armagh: *February 26th*, 1890.

Dolerus triplicatus, Klug, at Deal.—I captured a specimen of this rare sawfly on the sandhills at Deal in May, 1881. I sent the specimen last year to Mr. J. E. Fletcher, who returned it as *D. triplicatus*, Klug, at the same remarking that he had not seen the insect before. In Cameron's Monog. Brit. Phyt. Hymen., vol. i, p. 163, it is stated, "The only British example of this insect that I have seen was one taken by the Rev. T. A. Marshall in England, but I do not know the exact locality; those in Stephens' collection were taken in the neighbourhood of London."—C. G. Hall, 14, Granville Street, Dover: *April 2nd*, 1890.

Leia elegans, Winn.: a correction.—At p. 109, *ante*, line 13 from *top, for Sciara, read Leia. Platypeza rufa*, Meig. (p. 108), can be easily distinguished from any other British species of the genus by the redness of the abdomen, and the sexes, from each other, by the wings of the ♂ being dark, and of the ♀ light.—C. W. Dale, Glanville's Wootton: *April*, 1890.

[The unfortunate substitution of "*Sciara*" for "*Leia*" shows how important it is that contributors should endeavour to write as distinctly as they possibly can.—Eds.]

Tettix bipunctatus hibernating.—Mr. James Eardly Mason, of Alford, has kindly sent me a fully developed ♀ of *Tettix bipunctatus*, Linné, taken by Mr. Edward

Woodthorpe in Greenfield Wood, near Alford, Lincolnshire, on March 22nd this year. No doubt it is a hibernated specimen, and though this species is known to sometimes survive the winter in South Europe, its doing so so far north is of interest. De Selys gives July as the date of its earliest occurrence in Belgium, and records its hibernating habit.—ELAND SHAW, Wandsworth: *April*, 1890.

Obituary.

Joseph Sugar Baly, M.R.C.S., F.L.S., F.E.S., of "The Butts," Warwick, died, we think somewhat suddenly, on March 27th, aged 73. Of his early history we know nothing. He became M.R.C.S. in 1840, and L.S.A. in 1841. In 1850 he joined the Entomological Society of London, and was then established in North London, with an extensive practice, where he remained until about 1868, when the death of a relative, and material considerations, induced him to relinquish his London practice and to settle at Warwick, which afterwards became his home, and where he resumed private practice, and held several professional public appointments, and for which borough he was also a magistrate. Outside a certain amount of attention paid to the higher groups of exotic *Hymenoptera*, Baly devoted his life, from an entomological point of view, almost solely to Phytophagous *Coleoptera*, and on this subject he became one of the foremost authorities. What was probably his first paper, of any importance, was published in the Trans. Ent. Soc. Lond., in 1855, and thenceforward his communications were continuous, occupying places in all available Transactions, Proceedings, and Journals. During the latter years of his life his activity was greater than ever. He must have been responsible for an enormous number of new species and many new genera in *Phytophaga*. His work was almost purely descriptive, dry and unattractive to the general reader, and, so far as can be judged by the test of time, of a generally sound nature.

Mr. Baly married early, and had a large family. During his residence in London, he was a constant attendant at the Entomological Society and kindred meetings. In private life he was quiet, amiable, and unemotional, making many friends; in some matters his character was marked by extreme simplicity. After his removal to Warwick, his visits to London, and consequent association with old friends, were few, but he is none the less regretted by a large circle of acquaintances. He was elected a Fellow of the Linnean Society of London in 1865, and was also a Member of the Entomological Societies of France and Stettin.

Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: *March 12th*, 1890.—The President, Mr. W. G. BLATCH, in the Chair.

Messrs. C. T. Parsons and H. R. Hodgkinson were elected Members of the Society. Mr. R. C. Bradley showed *Asphalia flavicornis* from Solihull, in one of which the stigmata had coalesced. Mr. H. M. Lee showed three *Hesperia*, apparently *lineola*, which he had found in a collection, and which he believed came from Jersey. Mr. C. J. Wainwright showed a collection of insects from Colombia, S.

America, including some fine *Morphos*, *Papilios*, *Heliconias*, &c. Mr. W. G. Blatch read a note on a new species of the Family *Scydmænina*, which he proposed to call *Neuraphes planifrons*; it was taken under bark of birch stumps, in company with *Scydmænus Godarti* and *exilis*, at Sherwood Forest.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: *March 27th*, 1890.—J. T. CARRINGTON, Esq., F.L.S., President, in the Chair.

Mr. C. G. Barrett exhibited a series of *Dianthœcia carpophaga*, Bork., showing fully its connection with its variety, *D. capsophila*, Dup., and a specimen of *D. luteago*, Hb., v. *Barretti*, all reared by Mr. Blandford from larvæ found in South Wales. Mr. Joy, an immature specimen of *Mantis religiosa*, from the Suez Canal. Mr. T. R. Billups, several species of *Ophionides*, bred by Members of the Society: amongst others, *Paniscus testaceus*, Gr., *P. cephalotes*, Holmg., and *Ophion luteum*, L., bred by Mr. Barker from the larvæ of *Dianthœcia capsincola*, Hb., the latter species also being reared by Mr. Wellman from *Hadena pisi*, L., and by Mr. South from *Toxocampa craccæ*, Frr. Mr. Billups called particular attention to the fact that the cocoons of *Ophion luteum* differed considerably according to the host from which bred. Mr. Billups also called attention to the extreme variability in size of *Paniscus cephalotes*, two females taken by himself at Hayling Island in 1866, being not above one-third larger than the female bred by Mr. Barker. In the same box were shown *Banchus moniliatus*, Holmg., bred from the larvæ of *Panolis piniperda*, also both sexes of *Exetastes osculatorius*, Fab., from the larvæ of *Retinia pinicolana*, Dbl., by Messrs. South and Adkin. Among Mr. Billups' other exhibits were a specimen of *Phygadeuon sodalis*, Tasch., taken in his own garden, June 1st, 1889, and a female of *Hemiteles macrurus*, Tasch., taken at the same place, August, 1889, both species being new to Britain. *Phygadeuon* (*Microcryptus*) *rufoniger*, Bridgm., a new species. Mr. Perks showed pond life from Barnes Common, and Mr. Tugwell and Mr. Step exhibited botanical specimens, and contributed remarks.

April 10th, 1890.—The President in the Chair.

Lieut. E. W. Brown and R. McAllan, Esq., were elected Members.

Mr. Tugwell exhibited a series of *Tephrosia crepuscularia*, W. V., and *T. biundularia*, Bork., with water colour drawings of both larvæ from life, and remarked that after breeding both insects he was perfectly convinced as to their being distinct species, although evidently closely allied. *T. crepuscularia* appeared from the last week in March to the middle of April, and was always a partly double-brooded species; *T. biundularia* appeared early in May until the first week in June, and was only single-brooded; in every case the insect remained true to the parent type, and although the markings were somewhat alike in both species, yet there were characteristic differences, as shown in the series exhibited, this also applied to the larval stages. Mr. Barrett and Mr. Tutt made some observations on this exhibit; the latter gentleman agreeing with Mr. Tugwell, and Mr. Barrett expressing an opinion that *crepuscularia* and *biundularia* were not distinct. Mr. Turner showed a very light form of *Nyssia hispidaria*, Fb., from Richmond. Mr. Carpenter also exhibited varieties of the same species. Mr. Fenn, a long series of *Larentia multistrigaria*, Haw., showing a melanic tendency. Messrs. Skinner, R. W. Adkin, and W. West exhibited *Coleoptera*; the latter gentleman a very interesting collection from the Colombian Republic. Other exhibits were made by Messrs. Billups, Step, Manger, Tugwell, &c.—H. W. Barker, *Hon. Sec.*

Entomological Society of London: *April 2nd*, 1890.—Frederick DuCane Godman, Esq., M.A., F.R.S, Vice-President, in the Chair.

Mr. G. Bryant, of 6, Oakley Crescent, Chelsea, S.W.; Mr. A. E. Hall, of Norbury, Pitts Moor, Sheffield; Mr. J. J. F. X. King, of 207, Sauchiehall Street, Glasgow; Mr. H. C. Oakshott, of De Beauvoir House, Falmouth; Mr. A. E. Stearns, of The Lodge, Upper Halliford, Walton-on-Thames; and Mr. G. Vigers, of Hersham, Surrey, were elected Fellows.

Mr. Godman announced the death of Mr. Joseph S. Baly, of Warwick, the well-known Coleopterist, who had been a Member of the Society for the last forty years.

Dr. Sharp exhibited and made remarks on a female specimen of a Coleopterous insect—*Temnochila quadricollis*, Reitt.—which was the subject of a very unusual malformation of the nature termed "ectromélie" by Lacordaire.

Mr. R. W. Lloyd exhibited three specimens of *Elater pomonæ*, taken at Brockenhurst, in the New Forest, about the middle of March last.

Colonel Swinhoe exhibited, and read notes on, a number of butterflies of the genus *Euthalia*. He pointed out that the specimens described as a species by the name of *Euthalia Sedeva* were only the females of *E. Balarama*.

Mr. T. R. Billups exhibited male and female specimens of *Cecidomyia salicis-siliqua*, Walsh, which had just emerged from galls received from Mr. Cockerell, who had collected them on a species of sallow in Colorado. He also exhibited three species of *Ichneumonidæ* new to Britain, viz., *Ichneumon Haglundi*, Holmgr., bred by Messrs. Adkin and Barker from *Arctia fuliginosa*; *Phygadeuon rufo-niger*, Bridg., taken in Ashdown Forest in November, 1885; and *Phygadeuon sodalis*, Tasch., taken at Dulwich in June, 1889.

Mr. C. G. Barrett exhibited specimens of *Bryotropha obscurella*, Hein., and *Doryphora elongella*, Hein., two species of *Micro-Lepidoptera* new to Britain.

Dr. Thallwitz, of Dresden, contributed "Notes on some species of the genus *Hilipus*." These notes had reference to a paper on the genus *Hilipus*, by Mr. F. P. Pascoe, published in the "Transactions" of the Society for 1889.

Mr. E. Meyrick read a paper entitled, "The Classification of the *Pyralidina* of the European Fauna." Mr. Kirby, Mr. McLachlan, Mr. Elwes, and Mr. Barrett took part in the discussion which ensued.

Prof. Westwood communicated a paper entitled, "Notes on certain species of *Cetoniidæ*."

Mynheer P. C. T. Snellen, of Rotterdam, contributed a paper entitled, "A Catalogue of the *Pyralidæ* of Sikkim, collected by H. J. Elwes and the late Otto Möller," and Mr. Elwes read certain notes on the foregoing paper as an Appendix. Mr. W. L. Distant, Colonel Swinhoe, Mr. McLachlan, and Mr. Jacoby took part in the discussion which ensued.—H. Goss, *Hon. Sec.*

NOTES ON THE GENUS *SMICRONYX*, SCHÖNHERR, WITH A DESCRIPTION OF A SPECIES NEW TO BRITAIN.

BY THE REV. CANON FOWLER, M.A., F.L.S., &c.

This genus contains about twenty-five species, which are chiefly found in Europe; others occur in Northern Asia, and probably in North America; representatives have also been described from Madeira and the Canaries, South Africa, Cuba, the Caucasus district, &c.; they are among the smallest of the *Rhynchophora*, and may be very easily passed over, so that, in all probability, the number of species will be found to be much greater than is at present known; they fall, as observed by M. Bedel (Faune des Coléoptères du bassin de la Seine Rhynchophora, p. 109), into two divisions, which will probably have to be separated as distinct genera; in one of these the striæ of the elytra are finer, and the elytra themselves are almost bare, and in the other the elytra are plainly striated, and more or less thickly clothed with scales, which are exceedingly easily abraded; four species have usually been regarded as British, but I do not feel at all sure as to their right determination or their synonymy; they are extremely rare insects, so that it is hard to obtain the material on which to work the genus: through the kindness, however, of Mr. S. Stevens, Mr. Champion, and others, I have been enabled to examine some fifty specimens. M. Bedel has also kindly examined several of these for me, and among them he has found two specimens of *S. cœcus*, Reich. (*cuscutæ*, Bris.), which must, therefore, be added to the British list. At first, after a careful examination with a compound miscroscope, I came to the conclusion that the specimens standing in our collections as *S. cicur* and *S. pygmæus* are identical; however, after an examination of the specimens named by M. Bedel, I have modified my first impressions, and am of opinion that, according to continental ideas, the specimens that we have hitherto regarded as *S. jungermanniæ* should be referred to *S. Reichei*, that *S. jungermanniæ* and *S. cicur* are synonymous, and that the specimens standing under *S. pygmæus* in our collections should be referred partly to *S. Reichei*, and partly to *S. jungermanniæ*; in fact, I am not sure whether Curtis' original specimen of *S. pygmæus* is not identical with *S. cœcus*, in which case the latter name must be sunk. The genus is certainly a very puzzling one, and the characters ill-determined; the punctuation of the thorax, for instance, is by some authors regarded as a valuable character, but it appears to differ considerably in different specimens of the same species, as I have found by examining them under a strong light with high power; when quite fresh, the insects are covered with large, elongate-ovate, whitish and brownish scales, which are arranged thickly on the thorax, and in double rows on the interstices of the elytra; they are very pretty objects under the microscope, and in some lights are plainly iridescent; owing to their size and the loose way in which they are set on the surface, they are exceedingly easily abraded, and very soon get rubbed off; specimens from which they have been entirely removed are quite black, and more or less shiny, and present a very different appearance to fresh or half abraded specimens. The species attack various parasitic plants, especially the dodder (*Cuscuta europæa*); they deposit their eggs in the stem, and the larva lives in a sort of gall, from which it emerges and buries itself in the earth before undergoing its transformations.

I. Tarsal claws uneven, the internal claw being very short; thorax finely punctured; elytra oval and shining, usually denuded of scales .... *S. cæcus*, Reich.

II. Tarsal claws equal; upper surface usually more or less squamose.

- i. Thorax with shallow and rather close punctures, duller, interspaces finely but plainly cross-reticulate; body behind thorax broader... *S. Reichei*, Gyll.
- ii. Thorax with very shallow and comparatively diffuse punctures, less dull, interspaces more finely and often scarcely evidently cross-reticulate; body behind thorax narrower ....*S. jungermanniæ*, Reich. (*cicur*, Gyll.).

S. cæcus, Boh. (*cuscutæ*, Ch. Bris.).—Oblong-ovate, black, shiny, with scanty narrow scales, which are easily rubbed off; thorax globose, narrowed in front, finely punctured; elytra a little broader at base than thorax, with the shoulders well marked, oval and shining, with fine but distinct striæ and finely sculptured interstices; legs rather stout, claws unequal, the inner one being very short; size variable. Length, 1¼—2 mm.

On *Cuscuta europæa* (the Greater Dodder): two specimens, but without locality, one in the possesion of Mr. Champion from Mr. Scott's collection, and one in my collection. Bedel gives as localities, Northern and Central Europe. The Greater Dodder, according to Bentham, is parasitic on a variety of plants, more especially on herbaceous stems, in Europe and temperate parts of Asia; it is not very abundant in England, and has not been recorded with certainty either from Ireland or Scotland.

S. Reichei, Gyll. (*pygmæus*, Curt., *pars*).—Oblong-ovate, black, rather shiny, closely covered, in fresh specimens, with whitish and brownish-white or brownish scales, which are arranged thickly on the thorax, and more or less in patches on the interstices of the elytra; under-side more thickly scaled; rostrum long; antennæ rather stout, pitchy at base; thorax convex, about as long as broad, scarcely constricted in front, with the sides somewhat variably rounded in different specimens, shallowly and rather closely punctured, with the spaces between the punctures cross-reticulate, or finely rugose; elytra broader at base than thorax, with the shoulders more or less marked, narrowed to apex from posterior third, with plain and rather deep, scarcely visibly, punctured striæ, interstices, under a high magnifying power, finely rugose; legs stout, covered with fine scales, tarsi with the penultimate joint strongly bilobed, and the onychium short. Length, 1½—2 mm.

On *Cuscuta europœa*; the larva, according to Bedel, forms galls on the stems of the plant; rare; Birch Wood, Arundel Park, &c. (S. Stevens); Box Hill, near Reigate (Power); Chesil Bank (Gorham).

var. Championis, Fowler.—Rather larger than average specimens of the type, with the rostrum thicker and duller, and the thorax more thickly and coarsely punctured; the shoulders also of the elytra are rather more marked and broader... Length, 2 mm.

Folkestone (E. A. Waterhouse); between Folkestone and Dover (Champion).

This is the insect introduced into our lists by Mr. Champion as the true *S. Reichei.*

S. jungermanniæ, Reich. (*cicur*, Gyll., *pygmæus*, Curt., *pars.*).—Much smaller than the preceding on an average, but closely resembling it in many respects, so that it is rather hard to separate the largest specimens from the smallest *S. Reichei*; elongate-oval or oblong-oval, narrower or broader (this difference may be sexual), thickly clothed, in fresh specimens, with large scales, as in the preceding species, and on the under-side and legs with fine scales; thorax about as long as broad, scarcely constricted before apex, with very shallow and more or less diffuse variolose punctures, interstices very finely cross-reticulate or rugose; elytra and legs much as in preceding species. Length, 1¼—1¾ mm.

On heath, perhaps on *Cuscuta* attacking heath; rare; as some people may not agree with me in my synonymy, or in joining the species, I give localities under the separate names of *S. cicur* and *S. pygmæus*.

S. cicur, Gyll.: by sweeping heath; local and, as a rule, rare; London district, not uncommon; Weybridge, Shirley, Woking, Esher, and Chobham (Champion); Black Gang Chine, Isle of Wight, Weybridge, &c. (S. Stevens); Boundstone, Surrey, St. Faith's, Norwich, and St. Leonard's (Power); Bournemouth, New Forest (Blatch).

S. pygmæus, Curtis: chalky places; by sweeping herbage, rare; Caterham (Champion); Riddlesdown, near Croydon, Horsell and Weybridge (Power); Chesil Bank, Bournemouth, and Surrey (Blatch). It is more than probable that some of these localities should be referred to *S. Reichei*; all the localities given above for the type form of *S. Reichei* have been primarily assigned by British authors to *S. jungermanniæ*.

It will be seen that the genus, in spite of its small size, is very difficult to deal with; it is quite probable that I am wrong in my determinations, and I shall be very much obliged if any person who has worked the genus will give me the benefit of his experience regarding it; the chief difficulty lies in collecting together sufficient material to work upon, as the species are so very scarce, and I doubt whether any British collector has had the opportunity of examining as many specimens as I have been enabled to get together; and yet I feel very doubtful how to separate them, and am not sure whether *S. Reichei*, as above defined, may not ultimately prove to be synonymous with the succeeding species.

Lincoln: *May 6th*, 1890.

A FURTHER CHAPTER IN THE LIFE-HISTORY OF *MICROPTERYX*.

BY JOHN H. WOOD, M.B.

The egg-laying of *Micropteryx* was so unsatisfactorily dealt with in my former notes—the only point then ascertained being the fact that the egg could not be found by the closest search on the surface of the leaf—that its solution became a matter for special investigation this spring. The result has been so startling, and has opened up at the same time so wide an enquiry—for other genera have been found to lay their eggs in the same way—that it seems advisable to draw immediate attention to the subject, and not wait till the exact limits of the habit have been ascertained, or the minute and complicated anatomy connected with it is completely worked out; and there is the greater reason for this, because I feel that the solution of the latter part of the problem requires the skill of a more practised microscopist than I can pretend to be. Under these circumstances I will now merely give an outline of the facts and processes observed, and in a subsequent paper the anatomical details, so far as I have been able to elucidate them, aided by the suggestions and criticisms of my valued friend Dr. Chapman.

The extraordinary fact, then, that has come to light is, that *Micropteryx* lays her egg *like a sawfly* WITHIN THE SUBSTANCE OF THE LEAF.

Several fruitless visits had been made to a sunny spot where I knew, from the number and variety of the mines in the previous summer, that the moths ought to be abundant; but it was not till

April 5th that the mystery was unravelled, and I saw *semipurpurella* in the act of laying an egg. She had selected a rather forward bush with the leaves already partially protruding. Her first step was to examine carefully with her maxillary palpi, which looked in their movements like a pair of delicate legs, the opened bud, and having found it to her liking, she folded up her palpi, and took up a position lengthways upon the exposed part of the leaf, curved round her abdomen and inserted its points between the folds; a series of quick thrusting or rocking movements with short intervals of rest took place, and then the abdomen was gently withdrawn. She then travelled up the twig, using her palpi incessantly, to the next bud, which she examined carefully as before, and again went through the same process; and thus she visited bud after bud on the twig, making but a single laying in each. When the leaves were examined at home it was seen that a small incision had been made in the under-side, which led to a rather deep oval chamber or pocket, at the bottom of which the egg lay. About the same time, and quite independently, Dr. Chapman made a similar discovery in connection with *purpurella.* This species usually sits across the leaf, and does not insert her abdomen between the folds, but pierces the leaf on the edge of one of the lateral ribs. Her pocket too is broader and shallower, and the three eggs which it usually contains are placed side by side.

When I first saw *semipurpurella* at work the weather was warm, and she took about 2½ minutes to cut the pocket and lay her egg; but afterwards, in colder weather, the process occupied more than four minutes. *Unimaculella* I have timed at a little over nine minutes, but the weather was cold, and probably under favourable circumstances she would be considerably quicker. I have not succeeded in watching out *purpurella,* and all I can say is that in cold weather she exceeds fifteen minutes, but how much I do not know. This is in strong contrast to *Incurvaria muscalella,* another insect having the same habit, which Dr. Chapman tells me cuts her pocket in the under-side of a sloe leaf in from ten to fifteen seconds.

The egg is about twice as long as broad, cylindrical, with rounded ends, and with a white delicate shell, which yields readily to pressure. Placed at the bottom of the pocket, there is at first ample space all round it, but it steadily increases in size till it fills and fairly distends the lower part of the pocket, but never quite reaches to the top. In *purpurella* the eggs so press on each other in their growth that all symmetry is lost. For the following measurements I am indebted to n the upper-side this species is much

gia ♂ (Ill. Diurn. Lep., t. 43, f. 176), but the under-side

be a much more near ally of *T. Ophelia*.

THECLA TELEONTES, *sp. n.*

♂. Allied to *T. Orgia*, Hew. The ground colour of the wings beneath dark oky-brown, with purplish reflections. The black spot on the secondaries much ger, and the outer (marginal) green line wanting, except near the anal angle.

Hab.: Interior of Colombia. Mus. Druce.

This species is also in the collection of Messrs. Godman and Salvin from the same locality.

THECLA STIGMATOS, *sp. n.*

♂. Allied to *T. punctum*, Herr.-Schäff. Primaries below unspotted, with the base bright red (which red extends some distance along the costa). Secondaries without the red spot at the anal angle, and with the two spots on the costal margin very much larger.

Hab.: Interior of Colombia. Mus. Druce.

THECLA CYDONIA, *sp. n.*

♂. Upper-side: primaries uniform dull jet-black, with a minute opalescent marking at the end of the cell. Secondaries brilliant dark purplish-blue, rather narrowly and evenly bordered with black. Under-side: pattern of wings exactly as in *T. janthina*, Hew., but ground colour somewhat deeper.

Hab.: Interior of Colombia. Mus. Druce.

This beautiful species is allied to *T. janthina*, Hew., and *T. Sista*, Hew., from which it is at once distinguished by the black fore-wings and by the darker blue hind-wings.

This species is also in Messrs. Godman and Salvin's collection from the same locality.

THECLA LEMNOS, *sp. n.*

♂. Allied to *T. Serapis*, Godm.-Salv., but the blue on upper surface darker and more extensive, the yellow spot between the median branches on the hind-wing is wanting, and there is a large yellow spot at the anal angle as in *T. Balius*, Godm.-Salv. On the under-side the discal line on the hind-wings is much more irregular and terminates in a large circular spot on the costal margin. The yellow at the anal angle being almost entirely replaced by black.

Hab.: Interior of Colombia. Mus. Druce.

In size this species equals *T. Balius*.

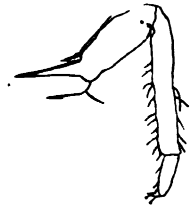
London: *April*, 1890.

NOTES ON SOME BRITISH AND EXOTIC *COCCIDÆ* (No. 16).

BY J. W. DOUGLAS, F.E.S.

PSEUDOCOCCUS ACERIS.

Pseudococcus aceris, Sign., Ess. Cochen., p. 363 ; E. A. Smith, N. American Entomologist, vol. i, p. 73, pl. vi (1880) ; Comstock, Report for 1880, p. 345.



Adult ♀. Broad-oval, obtuse and broadly rounded in front, pale olivaceous, eventually becoming greenish-ochreous, body thick, tumid above and beneath, surface smooth, punctate, with many fine white hairs, long on the posterior segments; anal ring large, with six long hairs; the last segment deeply emarginate, the lobes rounded. Antennæ long, slender, of nine joints, the first broad, stout, second smaller, longest of all, the third nearly as long, the others consecutively smaller and shorter up to the ninth, which is longer and pointed, all with few hairs. Tibiæ three times longer than the tarsi; claws short, stout, inwardly finely denticulate, with two knobbed digitules (fig.).

Length 5, breadth 2·5—3 mm.

The very slender antennæ became twisted or broken in preparation for the microscope by Mr. R. T. Lewis, and did not afford satisfactory drawings ; the legs came out better.

The abdomen of some of the specimens was distorted by a large swelling on the dorsal surface ; from three or four of these a white Dipterous larva came out, but none of them survived to maturity.

Now first noticed as British. Signoret says that it is found on maple, hornbeam, *lime*, and horse-chestnut.

On May 24th and 29th, 1889, I received from Mr. E. Parfitt, Exeter, some examples of this species, which he had found in the crevices on the boles of lime trees, where they were conspicuous by their ovisacs, but there were none on the elms growing with the limes. The ovisac, formed of white, slight, brittle, cottony material, 8—9 mm. long and 3½ mm. broad, is closely occupied in the anterior portion by the insect (over which the covering is very thin), the remainder filled with small white eggs. There was no trace of the male. Probably both sexes exist until they are adult on the leaves of the trees ; that after accouplement the males die immediately and disappear, after the manner of Coccids in general, and then the females as a rule travel (as I have seen they are well able to do) to the trunk where, in a secure place, the ovisac may be developed.

I may here remark that there is much difference in character among the ovisacs of all the species of *Pseudococcus* that I have seen, consequent, doubtless, on variation of the secreting organs, affording good subsidiary data for estimating specific specialities.

In his "Report," *l. c.*, Professor Comstock refers to an article in

On the upper-side this species is much like Hewitson's figure of *T. Orgia* ♂ (Ill. Diurn. Lep., t. 43, f. 176), but the under-side proves it to be a much more near ally of *T. Ophelia.*

THECLA TELEONTES, *sp. n.*

♂. Allied to *T. Orgia*, Hew. The ground colour of the wings beneath dark smoky-brown, with purplish reflections. The black spot on the secondaries much larger, and the outer (marginal) green line wanting, except near the anal angle.

Hab.: Interior of Colombia. Mus. Druce.

This species is also in the collection of Messrs. Godman and Salvin from the same locality.

THECLA STIGMATOS, *sp. n.*

♂. Allied to *T. punctum*, Herr.-Schäff. Primaries below unspotted, with the base bright red (which red extends some distance along the costa). Secondaries without the red spot at the anal angle, and with the two spots on the costal margin very much larger.

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Hab.: Interior of Colombia. Mus. Druce.

In size this species equals *T. Balius.*

London: *April*, 1890.

longest of all, in length equal; 4th to 7th shorter, subequal; 8th a trifle shorter; 9th nearly as long as the 3rd, towards the apex laterally gradate; the upper joints especially with projecting hairs. Legs stout (fig. 2); the tibiæ two and a half times longer than the tarsi; claws short, with two short knobbed digitules.

Length, 3 mm.

♂ unknown.

On May 2nd, 1889, Dr. T. A. Chapman, Hereford, sent a small terminal twig of oak (*Quercus robur*), and among the buds were two young *Pseudococci*, about 1½ mm. long, livid, with a thin, white, powdery covering; of these forms the most noticeable character was a series of minute white tufts along the margins of the body; nothing specific could be determined, and I desired to see adults. On June 1st Dr. Chapman sent a quantity of young oak leaves, to the under-side of which were firmly attached white ovisacs containing at one end of each an adult of the young form described above, all alive and busy in the act of oviposition; on being turned out of the ovisacs they moved about readily.

The species resembles *Ps. aceris* in the great length of the tibiæ; but differs in the relative proportions of the several joints of the antennæ, and, as at once seen, in the structure of the ovisac, which in this species is smooth, and of compact, close texture, while in *Ps. aceris* it is looser, cottony and brittle; and although the insect is little more than half the size of *Ps. aceris*, the ovisac is 8 mm. long, thus much longer in proportion than in that species. Further, *Ps. aceris*, also *Ps. æsculi*, *mespili*, *platani*, and *ulmi*, appear to be found only on the trunks of the trees they respectively frequent, whereas *Ps. quercus* is seen only on the under-side of the young leaves of oak, or casually about their foot stalks. Finally, in view of all the discrepancies between this form and the species hitherto described, I must conclude that it is distinct.

The figures 1 and 2 are from the drawings of Mr. R. T. Lewis; fig. 3 by Mr. Morgan.

CRYPTOCOCCUS, *n. g.*

The species *Coccus fagi*, Baerensp., hypothetically referred by Signoret to *Pseudococcus* (*cf.*, Ent. Mo. Mag., xxiii, p. 153), has nothing to do with that genus, and as it does not accord with any other, I suggest for it a new genus, Cryptococcus; the characters are included in those of the species, *l. c.* It may have some, but not close, affinity with *Xylococcus*, F. Löw (Verh. k. k. z.-b. Gesells. Wien, 1882, p. 274); at present the position of both is doubtful.

Lewisham: *January*, 1890.

the "North American Entomologist," *l. c.*, by Miss Emily A. Smith on *Pseudococcus aceris*, found but rarely on maple (*Acer saccharinum*) in North America, and gives a description of it, avowedly derived from the description by Miss Smith and Signoret, and which is mostly in accord with that I have made from the examples before me; but, as I have previously noticed (*cf.*, vol. xxv, p. 125, foot note), the species is erroneously attributed to Geoffroy.

Miss Smith, *l. c.*, describes and figures the insect in all its stages, the male (which was not known to Signoret) for the first time. The only material discrepancy with Signoret's description that I notice is in the length of the tarsus of the ♀ imago, which is stated to be only half that of the tibia (whereas Signoret says the tibia is three times longer than the tarsus); but this may have been only a casualty of observation, and therefore not alone sufficient to invalidate the identity of the species. The position of the ovisac on the leaves instead of on the trunks of the trees also deviates from the habit of our examples, but this may not have been the general habit, and Comstock seems to have had no doubt that the insect is Signoret's *Ps. aceris*. I may note, however, that of *Ps. mespili*, Geoffr., Signoret says that the tibia is only twice the length of the tarsus, as in Miss Smith's species. Miss Smith also describes and figures a Chalcid parasite bred from her Coccids, as a new genus and species, *Acerophagus coccois*. Mr. L. O. Howard maintains the species, but merges the genus into *Rhopus*, Foerst. (Comstock's Report for 1880, p. 361).

PSEUDOCOCCUS QUERCUS, *n. sp.*

Adult ♀. Yellow-brown, soft, tumid, broad-oval, anteriorly rounded, end of body emarginate, with longish hairs; anal lobes rounded; anal ring with six hairs (Fig. 3); margin of body with shorter hairs; thorax with six deep punctures in two parallel rows of three; connection of thorax and body deeply incised at the sides, segments all visible; no marginal appendages. These females were enclosed in snow-white, dull, smooth, narrow, elongate, semi-tubular or flat-arched, thin, papery ovisacs, nearly three times the length of the enclosed insect, which was situate at one end, where only was a little cotton covering material; the rest of the tube full of loose, pale yellowish eggs. Antennæ of nine joints (fig. 1); 1st very broad, subglobose; 2nd and 3rd thinner,

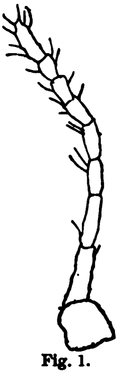

Fig. 1.

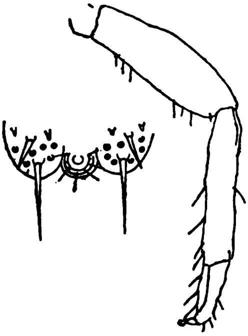

Fig. 3. Fig. 2.

longest of all, in length equal; 4th to 7th shorter, subequal; 8th a trifle shorter; 9th nearly as long as the 3rd, towards the apex laterally gradate; the upper joints especially with projecting hairs. Legs stout (fig. 2); the tibiæ two and a half times longer than the tarsi; claws short, with two short knobbed digitules.

Length, 3 mm.

♂ unknown.

On May 2nd, 1889, Dr. T. A. Chapman, Hereford, sent a small terminal twig of oak (*Quercus robur*), and among the buds were two young *Pseudococci*, about 1½ mm. long, livid, with a thin, white, powdery covering; of these forms the most noticeable character was a series of minute white tufts along the margins of the body; nothing specific could be determined, and I desired to see adults. On June 1st Dr. Chapman sent a quantity of young oak leaves, to the under-side of which were firmly attached white ovisacs containing at one end of each an adult of the young form described above, all alive and busy in the act of oviposition; on being turned out of the ovisacs they moved about readily.

The species resembles *Ps. aceris* in the great length of the tibiæ; but differs in the relative proportions of the several joints of the antennæ, and, as at once seen, in the structure of the ovisac, which in this species is smooth, and of compact, close texture, while in *Ps. aceris* it is looser, cottony and brittle; and although the insect is little more than half the size of *Ps. aceris*, the ovisac is 8 mm. long, thus much longer in proportion than in that species. Further, *Ps. aceris*, also *Ps. æsculi*, *mespili*, *platani*, and *ulmi*, appear to be found only on the trunks of the trees they respectively frequent, whereas *Ps. quercus* is seen only on the under-side of the young leaves of oak, or casually about their foot stalks. Finally, in view of all the discrepancies between this form and the species hitherto described, I must conclude that it is distinct.

The figures 1 and 2 are from the drawings of Mr. R. T. Lewis; fig. 3 by Mr. Morgan.

CRYPTOCOCCUS, *n. g.*

The species *Coccus fagi*, Baerensp., hypothetically referred by Signoret to *Pseudococcus* (*cf.*, Ent. Mo. Mag., xxiii, p. 153), has nothing to do with that genus, and as it does not accord with any other, I suggest for it a new genus, CRYPTOCOCCUS; the characters are included in those of the species, *l. c.* It may have some, but not close, affinity with *Xylococcus*, F. Löw (Verh. k. k. z.-b. Gesells. Wien, 1882, p. 274); at present the position of both is doubtful.

Lewisham: *January*, 1890.

Lithocolletis betulæ, Z.: an addition to our recognised British fauna.—*L. betulæ*: exp., 4½‴—5½‴. Fore-wings narrow, rich reddish-ochreous, *not glossy*, clouded with dark grey on the costa near the base and beyond the middle, and on the inner margin near the base; a long, slender, longitudinal white streak from the base reaches to near the centre of the wing, the second half being strongly arched forward; two slender, very oblique, white streaks from middle of costa and inner margin, and a shorter and broader oblique streak beyond from the inner margin, from the apex of which a dark streak runs to the base of the fringes at the extreme apex. All the transverse streaks broadly edged internally with dark grey, and a fine dark grey line at extremity of fringes.

Larva said to feed in the upper-side of birch leaves.

Sutherlandshire. V. e., VI.

This is the largest of our British species of *Lithocolletis*, and may be readily recognised by the broad dark grey markings and complete absence of gloss, both of which are so marked as to make the insect bear a superficial resemblance to *Bucculatrix Demaryella*, from which, however, it is immediately distinguishable by its large size. It belongs to the same group as *corylifoliella* and *caledoniella*. Collectors of the latter species should make sure whether their captures may not be really *betulæ*.

I have to thank Mr. W. H. B. Fletcher for the suggestion which put me on the right track with this insect, a fair number of which I have in previous years sent out as *caledoniella*, though I have always had doubts as to the naming; all my specimens having been taken in woods consisting only of birch, with a few scattered mountain ash trees, and no hawthorns; and the moths appearing to be confined to the birch trees. I have never been in Sutherlandshire at a suitable time for obtaining the larvæ.

Frey distinguishes *betulæ* from *corylifoliella* as follows (*vide* "Die Tineen der Schweiz," p. 353):—

betulæ: tarsis posticis immaculatis.
corylifoliella: tarsis posticis maculatis (raro immaculatis).

This distinction seems somewhat frail.—A. F. Griffith, 15, Buckingham Place, Brighton: *May*, 1890.

Spilonota pauperana.—I had the pleasure of taking two examples of this species during the last week. They were beaten from rose, and, from their condition, must have recently emerged. For obvious reasons, I have not mentioned the locality, as it is restricted in extent.—C. Fenn, Eversden House, Burnt Ash Hill, Lee: *April 28th*, 1890.

No Lepidoptera in Iceland!—In the "American Naturalist" for March, 1890, we read the following astounding statement:—"Dr. Walker and Dr. F. B. Mason enumerate nearly 100 species of insects in Iceland. It is rather curious that not a single species of *Lepidoptera* has so far been discovered there. No *Lepidoptera* have as yet been seen upon Pitcairn's island."

It would be difficult to give another so erroneous a misrepresentation of facts in so small a space. It need scarcely be said that the writer of the note *assumes that all Lepidoptera* are "Butterflies."

We are sorry to see such mischievous clippings figuring in a Journal that was once famous for its entomological articles, and suggest that steps be taken to fill the now vacant position on its staff formerly held by noted entomologists.—Eds.

Habits of the Honey Moth.—In the January number, under this heading, I notice a communication from Mr. C. G. Barrett, in which the "Messrs. Balding" are referred to as breeding a large quantity of *Galleria cereana.* I suppose I am the individual referred to, therefore, I may, perhaps, be allowed to supplement the the remarks of Mr. Barrett, which, as far as his description of the larvæ, pupæ, and imago are concerned, I can entirely corroborate. But his experience and mine do not coincide in the matter of dwarf specimens. Perhaps I fed my larvæ too well; anyhow, I got no imagos abnormally small. During August and September, I bred from the same comb a few *M. alveariella.* The fecundity of *cereana* is simply appalling, from a bee-keeper's point of view, as my figures will show. But I should like to ask Mr. Barrett if he is quite sure that this species does *not* feed as freely upon new as on old comb? I believe they do; but when the bees are driven out, and a myriad of caterpillars begin crawling all over and eating the comb, it soon assumes the appearance of being old.

On August 21st, 1889, I received from a friend six or seven "bars" of comb, which were literally swarming with *cereana* in all three stages—larva, pupa, and imago. In the remainder of the month I bred 130; in September, 806; in October, 28; making a grand total of 964. In addition to this, it must be borne in mind that the moths had doubtless been emerging about three weeks before I got the comb, and also that I only took about half that the hive contained. During the whole of the time that the moths were emerging, larvæ were also to be seen; in fact, I believe there has not been a week since August to the present time (April) when larvæ were not present in the comb, the only difference being that during the last four months they have been concealed in the cocoons, apparently hibernating. In breeding such a large quantity of one species, nothing struck me so much as the uniformity of the specimens, only one nearly black variety being obtained.—George Balding, Ruby Street, Wisbech: *April 19th*, 1890.

[Mr. Balding is right in his surmise, I referred to his brother and himself. My authority on the habits of the honey moth is the Rev. Henry Williams, of Croxton, Thetford, who is well known as a bee-master in that district, but I should feel great hesitation in asserting that the larvæ would not feed on new comb *rather than starve.* Mr. Williams assures me that the hives which contain old comb *only* are attacked.—Chas. G. Barrett.]

Habits of Biston hirtaria.—The following notes amplify a somewhat analogous observation recorded by Mr. McLachlan in this Magazine, Vol. xv, p. 14 (June, 1878). It is very possible that from long absences I am led to take especial notice of some of the species which are so common in London as almost to be passed unnoticed by residents, otherwise I do not understand how it is that so little notice has been taken of the curiously sedentary habits of the female *Biston hirtaria.*

When the earliest specimens appeared somewhat prematurely in March, many of the nights were so cold that it was natural enough to find specimens of either sex remaining in the same place for several successive days; but a month later it was different. One day towards the end of April I noticed that a female was sitting on a conspicuous tree at a street corner which I usually pass daily, and there I saw it day after day for nearly a fortnight. A day or two later two others established themselves on the next tree in different places, and there *they* remained until after the first had disappeared. Meantime others took up positions in other places, and remained for various periods—sometimes at a considerable height, and I came to understand it was a habit with the species. Some nights were warm, some cold, a few wet, many dry, but it made no difference. I touched one, but found it quite lively after standing *ten days* in the same place. I think that their eggs were all laid, and they had nothing more to do—and did it.—CHAS. G. BARRETT, 39, Linden Grove, Nunhead: *May 12th*, 1890.

On denuding wings of Lepidoptera.—Will any reader of the Ent. Mo. Mag. kindly let me have particulars of the process called, I believe, the "Waterhouse process," by which the wings of *Lepidoptera* can be cleanly denuded of scales, for the purpose of studying the neuration?—COLBRAN J. WAINWRIGHT, 147, Hall Road, Handsworth, Staffordshire: *May*, 1890.

[The wing is first dipped in spirit till it is wet through, then taken out and the spirit drained off with blotting paper, but the wing must not be allowed to dry. Place the wing in *eau de javelle (potassium hyperchlorite)*, and in a few minutes the scales will disappear. The time will vary from three to ten minutes, according to the density of the scales, the size of the wing, and the strength of the liquid. As soon as the wing is clear, it should be taken out and washed in water or spirit; it is best to float the wing on a card, and gently brush it from base to tip with a camel's hair pencil, first one side, then the other; the wing can be turned over by floating it in water. The wing may then be mounted on card, the edges being fixed with thin gum. For taking the wings out of the *eau de javelle* I use a thin edge of wood and a card, as the liquid destroys brushes. The *eau de javelle* deteriorates very soon by exposure, and should be kept in a stoppered bottle; the fumes should not be inhaled.—CHAS. O. WATERHOUSE.]

The late Prof. Frey's Collection.—We are able to announce that this collection has been acquired by the Trustees of the British Museum. The collection of European (or palæarctic) *Lepidoptera* will, by this addition, become very rich and representative.—EDS.

Hetærius morsus, Lec.: an entomological tragedy.—On the 23rd of April I hunted under rocks on a sunny bank at West Cliff, and among other good things found was a small Histerid beetle clinging to the under-surface of a stone which covered the nest of a brown ant, apparently, without doubt, *Formica fusca*, L. I at once posted my beetle to Dr. John Hamilton, and here is his reply:—"As you surmise, the Histeride you found is a great rarity, being *Hetærius morsus*, Lec. The only specimen in existence, *so far as I know*, is Dr. Leconte's specimen type, taken in California at Fort Tejon; but, alas! (I am afraid almost to tell you) that is still unique. Your cartridge was flattened out as if struck with a hammer, and the beetle entirely crushed. I examined it as it lay on the cotton, and as the other species are quite different, had no difficulty in recognising it. The upper surface agrees in every respect with Dr. Leconte's description, and the more extended one of Dr. Horn from the same insect, and their figures, except that Dr. Horn says the posterior section of the marginal thoracic border is globular and smooth, whereas in yours it was flat and pubescent. . . . . pubescent like the anterior, and on the same plane. . . . . I could not examine the under-side, as when I attempted to raise it from the cotton it all went to pieces."

As Dr. Hamilton remarks, "it may be long before another is taken;" but the crushed specimen has, at any rate, served to extend greatly the known distribution of the species, as well as giving us a first record of its habits.—T. D. A. Cockerell, West Cliff, Colorado: *May 2nd*, 1890.

Some recent captures of Coleoptera in the Midlands.—During a short visit to Cannock Chase at Easter I found *Homalota diversa*, *Stenus Guynemeri*, and *Agathidium globosum*, in *Sphagnum*, on the margins of the streams on the high moorland. *H. diversa* is a new record from the Midlands, and I had previously taken *Stenus Guynemeri* only at Matlock and Church Stretton in this district.

In a pit at the bottom of a wood at Knowle I found, during the present month, *Calodera æthiops* (plentiful), *Oxypoda lentula*, *Homalota debilis*, *H. decipiens*, *H. clancula* (in abundance), and *Deinopsis erosa*. The capture of the very rare *Homalota clancula* in such plenty in this locality seems specially remarkable, the only other place in which I have taken it being near Tonbridge in Kent. The sexual characters of this species being apparently undescribed, I am glad to be able to point them out:—♂ with under plate of 7th abdominal segment produced, rounded (like the small end of an egg), and ciliate, with a mixture of shorter and longer hairs, the shorter ones being thickly placed, and the longer ones interspersed at intervals. ♀ with the same plate slightly produced, scarcely rounded, and faintly emarginate in middle.—W. G. Blatch, Knowle, Birmingham: *May 17th*, 1890.

Trachyphlœus myrmecophilus at Hastings.—During the last year I devoted a good deal of time to hunting up this genus, and with very satisfactory results; I fancy these insects must be often overlooked, as I have hardly looked in a suitable place for them without finding them more or less abundant. *T. myrmecophilus*, hitherto, I believe, only recorded from Southsea, has turned up in numbers all over the district. I have taken it at Pett, Fairlight, Guestling, Hastings, and Bexhill, and in almost every case it was plentiful. On one occasion, I took over fifty specimens in less than an hour. The situation that *Trachyphlœi* evidently prefer is a dry sandy bank where the grass grows in patches, leaving bare spaces between. If the roots at the edges of these bare spots are closely examined, the *Trachyphlœi* will be found in favourable localities in large numbers. I have taken *scabriculus* and *scaber* in large numbers; *sqamulatus*, a nice series; and *alternans*, sparingly. Under the same conditions I met with a few *Orthochætes setiger*, and plenty of *Syncalypta hirsuta*. I shall be pleased to send *T. myrmecophilus* to any Coleopterist who may want it.—W. H. Bennett, 11, George Street, Hastings: *May*, 1890.

Coleoptera at Shiere in July.—Thanks to the kind hospitality of Dr. Capron, I had a few days collecting in this prolific locality last July. Although nothing turned up in numbers, I met with a few very good things, which are, I think, worth recording. In sandpits we found *Tachyusa scitula*, *Bledius longulus*, *Oxypoda brachyptera*, *Cychrus rostratus*, and *Syntomium æneum*. By evening sweeping the best things obtained were: *Triarthron Märkelli* (2), *Anisotoma dubia* and *calcarata*, *Trichonyx sulcicollis* (1), *Thalycra sericea*, and *Scydmænus angulatus*. On a paling I took a single specimen of *Conopalpus testaceus*, and Dr. Capron met with another by sweeping.—Id.

Rhizophagus cribratus, Gyll., at Orchardton, Castle Douglas, N.B.—It may be interesting to mention that to-day I took *Rhizophagus cribratus*, Gyll., in abundance, in a dead hedgehog. I have previously taken it here very sparingly under bark, and once found two upon pheasant droppings. It occurred in and on the animal, which I may add was exceedingly "high." *R. cribratus* had not been recorded from Scotland until I took a single specimen some years ago.—W. D. R. Douglas, Orchardton, Castle Douglas, N.B.: *April 30th*, 1890.

The food-plant of Timarcha tenebricosa, F. (*lævigata, Duft.*).—Col. Linley Blathwayt writes to me as follows:—"I saw in your note to *T. tenebricosa* (Brit. Col., iv, p. 301) that you have not observed its preference for *Galium* as a food-plant. There is a lane here in which this beetle abounds, and I have noticed dozens in the act of feeding, but never as either larvæ or imagos have I found them feeding on anything but *Galium*. *Meloë violaceus* swarms in the same lane; and in nine cases out of ten I have found them feeding on leaves and flowers of the lesser celandine, but occasionally I have found them eating grass."—W. W. Fowler, Lincoln: *May 6th*, 1890.

Scymnus arcuatus and other Coleoptera near Box Hill, Surrey.—Early in April I spent an afternoon searching for *Coleoptera* in the neighbourhood of Box Hill, with a friend interested in the same quest. Together we were well rewarded for the time spent, considering the early date and rather showery weather.

Early in the afternoon I obtained a specimen of *Scymnus arcuatus* by beating ivy on a tree. This seems to have been by a happy chance, for although we spent a good deal of time beating about ivy for more, no further specimens turned up. I have shown this beetle to Mr. Waterhouse at South Kensington, and he thinks it should be recorded.

Canon Fowler, in his new work, records only one previous capture, a single specimen from ivy. Whether finding it in ivy is a mere coincidence I cannot say; perhaps some one can give more information about the habits of the species abroad. Possibly more specimens may turn up from Surrey and help to solve the question; though it is a small insect, its peculiar markings make it rather conspicuous, and hardly likely to be overlooked.

The following species were also taken on this occasion:—*Chrysomela didymata*, *Lamprosoma concolor*, *Silpha atrata*, *Olibrus æneus*, *Leistus spinibarbis*, *Homalium pusillum*, *Oxytelus tetracarinatus*, *Thyamis lurida*, *Haltica oleracea*, *Tachyporus* *humerosus*, *Choleva anisotomoides*, *Calathus cisteloides*, and several *Harpali*, by general searching; *Rhizophagus depressus*, *Hylastes palliatus* and *ater* under bark on felled pines; *Omosita discoidea*, *Mycetophagus atomarius*, *Cicones variegatus* (4) from old stumps. It would be hard to say whether *C. variegatus* was actually in the stumps or in a black dry fungus with which some of the stumps were clothed. I found the specimens in the *débris*, and only where the black fungus was mixed with it. *Atemeles emarginatus*, two specimens with ants, five specimens of *Trox scaber* from an old dry woollen rag; a colony of water beetles in a small water feeding-tank yielded only *Hydroporus memnonius*, *H. lituratus*, and *Helophorus granularis*. The only really abundant species were the very common *Orchestes fagi* and *Myrmedonia canaliculata*.—T. H. Hall, 12, Derby Road, Watford: *May*, 1890.

Early abundance of Philopotamus montanus.—Easter, this year, April 3rd to 8th, I spent at Penmaenmawr, in North Wales. On the morning of April 4th, I worked along the mountain stream leading up to the Fairy Glen, with a view to ascertaining whether any *Trichoptera*, &c., were yet out. A few minutes on the stream sufficed to show that specimens, if not species, were plentiful, for *Philopotamus montanus* was spinning about in abundance in the sun, as actively as if it were midsummer; and when the sun was overcast, half a dozen or so might have been boxed off a single boulder. Being thus plentiful at so early a date, there is little doubt that this year a series of this species might easily have been taken, even before the month of March went out, as the weather had been fine and warm for some days previous to my visit. *Nemoura Meyeri* and *N. lateralis* were also common on the stream; and I picked one specimen of *Dictyopteryx microcephala* off a stone. Next day, the 5th, the stream from Aber up to the "Falls" was worked, but only the same species, omitting *D. microcephala*, occurred; and here *P. montanus* was not nearly so common either on the wing or on stones as on the other stream; the water being much more overhung with trees, thus keeping off the sun, probably accounted for this, as away from the stream the sun was very powerful, even more so than on the previous day. On the 7th, mountains only were worked, and in this group of insects only two specimens of *Stenophylax concentricus* were taken: the first in the daytime, close to the top of a very high peak, and the wind at the time was blowing a perfect gale; the other was found at night on a furze flower, on another mountain, and at a much lower altitude.—Geo. T. Porritt, Huddersfield: *May 5th*, 1890.

Notes on Pulicidæ.—*Ceratophyllus talpæ*, Curt.: on September 4th, I captured in a field-mouse's nest a specimen of this large flea. It was well figured by Curtis in his "British Entomology," in 1826. Mr. Verrall has included it in his list as *Hystrichopsylla obtusiceps*, Ritsema. It is quite certain that *talpæ* is a misnomer, as it is not found on the mole; but how about the law of priority, and, again, other species of insects are named after plants on which the larvæ do not feed? *Pulex gallinæ*, Bouché: this, I believe, to be identical with a species from Ceylon, named by Prof. Westwood, in the Ent. Mo. Mag., vol. xi, p. 246, as *Sarcopsyllus gallinaceus*. It infests the domestic fowl, and various other birds, as the robin, thrush, creeper, &c. It differs greatly from the common flea by the length of the antennæ, and is of a deep black above. There is another species which infests birds, which differs from it by being testaceous, by being less elongated, and by having shorter antennæ. It infests the nests of swallows, finches, pigeons, &c., and is the *hirundinii* of Curtis and Walker, and includes also *columbæ*, Walk., and *fringillæ*, Walk. *Ceratophyllus elongatus*, Curt., beautifully figured in "British Entomology," appears in Mr. Verrall's list as *Typhlopsylla octactenus*, Kolen.; it infests bats. *Typhlopsylla hexactenus*, Kolen., is apparently the *Pulex vespertilionis*, Bouché., found on the long-eared bat.—C. W. DALE, Glanville's Wootton: *May 5th*, 1890.

Entedon Amyclas, Walk.—Mr. Richardson has just given me specimens bred from *Nepticula gei*, which agree with specimens in my collection named by Mr. Walker as above. Very little appears to be known at present about the hosts of these little gems, although the kindred families are receiving a fair share of attention.—ID.

Tettix bipunctatus hibernating.—I thought it was a well known fact that *Tettix bipunctatus* hibernated and deposited its eggs in the spring. I have always been able to take it all through the winter from rubbish and dead leaves. I have also taken the other species in the winter, but more rarely.—ID.

Reviews.

THE IMMATURE STATE OF THE ODONATA. Part iii: by LOUIS CABOT. Memoirs of the Museum of Comparative Anatomy at Harvard College, Cambridge, U.S.A., 1890, with six plates: 4to.

This is a third instalment of a valuable series of memoirs, drawn up with great care, and illustrated from the author's drawings by plates of the highest order of lithography. The present part mainly concerns the sub-family *Corduliina*, with the addition of *Pantala* and *Tramea* in the *Libellulina*.

For the *Corduliina*, the author notices, or describes and figures, twenty-four species. All is done with the greatest care. Many nymphs are given as on supposition only, others with certainty, and others as undoubtedly uncertain. In our present state of knowledge of the preliminary stages of Dragon-flies, and the indubitable difficulty of rearing them, unless the nymphs be in a very advanced stage, uncertainty, to a greater or lesser extent, is inevitable. The broad principle as to the position of certain "nymphs" may rest undoubted; but to apply this principle in the manner that would be adopted with tolerable certainty of success by a Lepidopterist would here be futile. Much depends upon conditions, such as the finding of nymph-skins, with the perfect Dragon-flies in the immediate neighbourhood. The field-naturalist has had in view a still more important point. Dragon-flies on emerging from the nymph do not for some considerable time (varying as to the temperature) move far from the skin they have lately shed. And it is due to this that a very large majority of the nymphs (or rather the cast-off skins of them) have been identified with the perfect insects they produced.

All Mr. Cabot's memoirs on this subject bear the impress of Dr. Hagen's supervision in editing the text. The beauty and fidelity of the plates cannot be surpassed. Marvellous, indeed, are the short, broad, almost "square," forms of many of these nymphs, as compared with the narrow elongate bodies of the perfect insects.

LARVA COLLECTING AND BREEDING: A HANDBOOK TO THE LARVÆ OF THE BRITISH MACRO-LEPIDOPTERA, AND THEIR FOOD-PLANTS. By the Rev. J. SEYMOUR ST. JOHN, B.A. London: W. Wesley & Son, 1890; small 8vo, 165 pp.

This little book will no doubt be found useful to that large class of British Entomologists commonly known as "beginners." It is an industrious piece of compilation, from most of the available sources, of the known food-plants of our moths and butterflies to the end of the *Geometridæ*; arranged in the first instance according to the insects, and in the second according to the plants, well printed, and with very few misprints. Of course, many species are nearly polyphagous, others again are confined to one plant, or to allied plants, while still others can often be induced to feed on certain plants in confinement, which are not eaten (or, if so, only rarely) at large. Occasionally we note such extreme discrepancy in food-plants in species not polyphagous that we are almost induced to doubt whether some error in the original record may not have occurred. Our author's idea was to some extent foreshadowed in Dr. Knaggs' ever useful "Lepidopterists' Guide," where the subject of "substitute food-plants" is treated on at length, but not worked out systematically all through, as in this book. No doubt almost any of our more experienced working Lepidopterists could add very largely to the subject; but no work of this kind can aim at being perfect, and many of our younger workers will thank the author for bringing together so much useful information. There is a copious index, but a little confusing, owing to the English and Latin names of the plants and the genera of the insects all being jumbled up together alphabetically.

Obituary.

Louis Reiche passed away on May 16th in his 91st year. How many Entomologists there may exist who have lived to so patriarchal an age we know not; they must be very few. He was one of the founders of the Société Entomologique de France, and, in 1874, was elevated to the rank of Honorary Member thereof. His publications were very numerous, almost entirely on *Coleoptera*, and mainly appeared in the "Annales." Those who knew him personally will remember an amiable man, who had travelled much in Europe, and who could converse fluently in several languages other than his own. His French colleagues who remain to deplore his loss will no doubt in due time publish a detailed account of his life and works. Originally he was a manufacturer and merchant in Paris. Some years ago he sold his collections, and we much fear that in his old age reverses of fortune straightened his circumstances. Our own reminiscences recall pleasant hours passed with him at his house in the Rue du Vingt-Neuf-Juillet, Paris, where he resided for many years.

L'Abbé S. A. de Marseul.—Intimation of the very recent decease of this well-known and much-respected Coleopterist has been received. We are without further details. He was elected into the Société Entomologique de France in 1835, and in 1885 became Honorary Member. Since 1869 he was a Member of the Entomological Society of London. He first came into prominent notice as an Entomologist through his "Essai Monographique sur la Famille des Histerides," commenced in 1853, and continued (with Supplements) for many years. Outside this he published a Catalogue of European *Coleoptera*, which was re-edited as occasion required. In 1864 he originated a journal known as "L'Abeille," devoted we may say almost exclusively to his own work, and mainly to European *Coleoptera* (we have Vol. xxvi, 1889, now before us); much is original, much consists of translations and compilations from the works of other writers; all is useful, and we can hardly imagine that any working Coleopterist is without "L'Abeille" in his library. Latterly he occupied himself by compiling a List of the *Coleoptera* of the Old World, and by bibliographies concerning the most noted deceased Entomologists. We may have occasion to allude further to his labours and history.

Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: *April 21st*, 1890.—Mr. W. G. BLATCH, President, in the Chair.

Mr. Tye showed *Brephos parthenias* from Cannock, &c. Mr. R. C. Bradley showed *Diptera*, including *Thereva ardea* from Wyre Forest, new to Britain; *Sapromyza platycephala* from Moseley, also new to Britain; *Microdon devius*, confirmed as British, from Wyre Forest, &c. Mr. W. G. Blatch showed *Coleoptera* from Cannock, new to the Midlands; *Cymindis vaporariorum*, *Agathidium globosum*, *Homalota diversa*, and *Stenus Guynemeri*. Mr. R. Freer read a paper on "Sexual Dimorphism:" in which he contended that pigment was a store of waste energy; that females which required much energy for the reproduction of species, and to develop the extra size required for that purpose, had little waste energy, and were usually pale; while males, which were smaller, and did not use so much energy in the reproduction of the species, were generally darker. Much discussion followed the paper, in which Messrs. W. G. Blatch, Neville Chamberlain, E. C. Tye, H. Stone, and C. J. Wainwright took part.

May 5th, 1890.—The President in the Chair.

Mr. John Galbraith was elected a Member of the Society.

Mr. Neville Chamberlain showed *Ennomos quercinaria* and *Ematurga atomar*[illegible]a, in both of which species the males are larger and darker than the females; a[illegible]d, therefore, they present facts against Mr. Freer's theory of sex given at the l[illegible]st meeting. Mr. R. C. Bradley showed *Diptera*: *Xylota signis*, from Sutton, *X. abi*[illegible] and *sylvarum* from Wyre Forest. Mr. W. G. Blatch showed *Coleoptera*: *Calod*[illegible] *æthiops*, *Oxypoda lentula*, *Deinopsis erosa*, and *Homalota clancula*, all from Know[illegible] Mr. G. H. Kenrick read a paper on South African Butterflies, in which he narrat[illegible] a recent journey there, and exhibited the species taken, which included *Dan*[illegible] *Chrysippus*, the commonest of all; many *Acræas*, *Papilios*, *Pieridæ*, &c.; also t[illegible] moths, *Deiopeia pulchella* and *Sterrha sacraria*; he showed several very interesti[illegible] cases of mimicry. Mr. Chamberlain said he had been in Egypt at the time M[illegible]

Kenrick was at the Cape; there he saw very few butterflies, but of those few *Danais Chrysippus* was much the commonest, as at the Cape.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: *April 24th*, 1890.—J. T. CARRINGTON, Esq., F.L.S., President, in the Chair.

Mr. F. Warne exhibited a melanic variety of *Hemerophila abruptaria*, Thnb., taken in the London district. Mr. Barrett asked whether this variety had been recorded for any other neighbourhood. Mr. Briggs, in reply, said it was generally known that it occurred in the north and east of London only. Mr. Carrington, referring to the variety *radiata* of *Spilosoma lubricipeda*, Esp., remarked that between 1860 and 1870 this particular variety only occurred in a timber yard close to the railway station at York; he had recently visited the neighbourhood, and was interested to find that, although the timber yard had been taken by the Railway Company, the variety now occurred in fair numbers throughout the whole district, showing the gradual establishment of a certain form of variation. Mr. Tugwell exhibited specimens of the common butter-burr (*Petasites vulgaris*, Desf.), and made some remarks thereon, mentioning that it was the food plant of *Hydræcia petasitis*, Dbl. Mr. Tutt said that at Sheffield the species was taken in the factory yards on the plants growing among the refuse, but very rarely among the larger plants growing on the river banks. Mr. Rice, on behalf of Mr. H. Syer Cuming, exhibited among other documents the original rules and constitution of the Aurelian Society, bearing date June 1st, 1801; the rules and objects of the Entomological Society of London, founded on the Aurelian Society, and dated May 1st, 1806; both being signed by the Founders of the two Societies; a printed book of by-laws of the latter Society, dated 1807; an autograph letter and circular, signed by A. H. Haworth, dissolving the Entomological Society of London, dated April 10th, 1806; a priced catalogue of Haworth's Collection, sold at Stevens' June 23rd, 1834, and ten following days; and a catalogue of insects belonging to the Entomological Society, sold at Stevens' April 16th, 1858.

Mr. R. Adkin read a paper on the "Occasional Abundance of certain species of *Lepidoptera* in the British Islands." He took for his types several of the commoner species, including *Pieris brassicæ*, L., *Colias Edusa*, Fl., *Vanessa cardui*, L., *Plusia gamma*, L., &c. Having reviewed the known cases of migration, and the effects of meteorological conditions upon these insects, he concluded, that although immigration alone would sometimes account for a species being unusually common, the cases of exceptional abundance occasionally observed were, he thought, due to immigration taking place at a time when meteorological and other conditions were favourable to the economy of the species effected. Messrs. South, Tugwell, Barrett, Carrington, and others took part in the discussion which followed.

May 8th, 1890.—The President in the Chair.

Messrs. S. G. C. Russell, of Balham, G. C. Dennis, of York, and J. H. Rowntree, of Scarborongh, were elected Members.

Mr. Charles Fenn exhibited *Hedya pauperana*, Dup. Mr. Moore, galls of the so-called whistling tree, *Acacia fistula*, from Lower Egypt.—H. W. BARKER, Hon. Sec.

Entomological Society of London: *May 7th*, 1890.—Henry J. Elwes, q., F.L.S, Vice-President, in the Chair.

Mr. W. G. Blatch, of 214, Green Lanes, Birmingham ; Mr. F. J. S. Chatterton, 132, Queen Victoria Street, E.C.; Mr. Charles Fenn, of Burnt Ash Hill, Lee, .E.; and Mr. George B. Routledge, of 50, Russell Square, W.C., were elected Fellows.

The Secretary read a letter from the Vicar of Arundel, asking for advice as to the course to be taken to get rid of the larvæ of a beetle which were destroying the beams of the Parish Church. Mr. C. O. Waterhouse said he had already been consulted on the question, and had advised that the beams should be soaked with paraffin oil. Dr. Sharp, Mr. McLachlan, Mr. P. B. Mason, and the Chairman made some remarks on the subject.

Dr. Sharp exhibited specimens of *Caryoborus Lacerdæ*, a species of *Bruchidæ* and the nuts from which they had been reared. He stated that three of these nuts had been sent him from Bahia by the late Señor Lacerda, about six years ago ; that one of the beetles had effected its exit from the nut during the voyage ; a second had recently emerged, after the nuts had been in this country for five years ; and that a third had undergone its metamorphosis and died within the nut. Dr. Sharp also exhibited many specimens of minute *Diptera*, collected by Mr. Herbert Smith in St. Vincent, prepared by a peculiar process, which was not explained, and read a letter from him to Mr. Godman on the subject of the vast number of small species of this and other Orders which he had recently collected in that island. Mr. McLachlan, Mr. Mason, Mr. Waterhouse, and Mr. Elwes took part in the discussion which ensued.

Mr. R. T. Lewis, on behalf of Mr. W. M. Maskell, of Wellington, New Zealand, exhibited and read notes on about twenty-five species of *Coccidæ* from that colony. He also exhibited some specimens of the larvæ and imagos of *Icerya Purchasi*, Maskell, obtained from Natal, where the species had proved very destructive to orange, lemon, and other fruit trees. He also showed specimens of the larvæ of an allied species from Natal, originally assigned by Mr. Douglas to the genus *Ortonia*, but which Mr. Maskell was inclined to regard as a new species of *Icerya*. Mr. McLachlan and the Chairman commented on the interesting nature of the exhibition, and the importance of a knowledge of the parasites of injurious insects, in connection with which special mention was made of the researches and discoveries of Prof. Riley.

The Secretary exhibited, on behalf of Mr. T. D. A. Cockerell, of Colorado, a large collection of insect-galls, and read a letter from Mr. Cockerell on the subject. Mr. Mason said he should be happy to take charge of these galls, with a view of rearing the insects and reporting the results.

Mr. H. W. Bates communicated a paper, entitled, "On new species of *Cicin-*

Goss. *Hon. Sec.*

SYNOPSIS OF THE BRITISH *ORTHOPTERA*.

BY ELAND SHAW, F.E.S.

(*Continued from page* 97).

V.—GRYLLIDÆ.

Of the crickets we have five British representatives belonging to four genera. About one of these (*Œcanthus pellucens*, Scop.) there must be considerable doubt, for we depend on but one record of its occurrence, and this Stephens, writing in 1835, tells us, took place "many years since." However, it is said to have been taken here once, and let us hope that it may be taken here again, meanwhile retaining its name in our fauna list until such time as the abundance of negative evidence compels us to erase it.

The following details of structure should be noticed in the British species:—

The vertex is broad and rounded, and not separated from the frons by a furrow as in the *Locustidæ*. (In our European genus *Platyblemmus* the vertex is sometimes produced into a lamelliform process). The position of the ocelli is of importance, and gives some good characters. The antennæ are long and filiform. The pronotum, except in *Gryllotalpa*, shows nothing of importance. The elytra have a peculiar structure and consist of two portions—an anterior (lateral in a state of rest) and a posterior (dorsal) portion; and these two are placed almost at a right angle to one another. The homologies of the veins are somewhat difficult to make out, but Saussure has given an excellent nomenclature for them, particularly as regards the modifications of the vena plicata, which form the stridulating apparatus, and this is recapitulated and further observations made by Brunner. The mediastinal vein is wanting. There is but one radial vein, and this sends several branches towards the anterior border of the elytron, and is unbranched posteriorly. The ulnar veins are two (anterior and posterior) as in the *Acridiidæ*, and run close together, the anterior being much stronger than the posterior, and forming the ridge between the vertical and horizontal (lateral and dorsal) portions of the elytron. The vena dividens runs as usual straight from the base, and is usually somewhat deeply seated. So far the elytra of both sexes are alike; but in the ♂ the branches of the vena plicata are modified into a stridulating organ, while in the ♀ they are simple. In the ♂ the vena plicata, after a straight course for the first quarter, turns at nearly a right angle towards the posterior margin, and on the under-side is here cross-ribbed, and is the sound-producing mechanism. Close to the posterior margin the vein turns again sharply towards the anterior margin, the point where it turns is dilated, and is the "*nœud anal*" of Saussure, from which several branches emerge and spread out like a fan; the main vein proceeds outwards and forwards till it reaches the last quarter of the length of the elytron, where it joins the vena dividens, and here another dilatation is seen, the "*stigma*" of Saussure. Thus a triangular area (the "*harpa*") is enclosed between the two deflected parts of the vena plicata and the straight running vena dividens, and this is crossed by some wavy oblique veins ("*veines obliques*," Sauss.), the number of which is of systematic importance. Just posterior to the stigma is seen a more or less circular cell (*tympanum* or *speculum*, Br., *miroir*, Sauss.), formed by branches of the vena plicata and branches from the anal knot (*nœud anal*, Sauss.), and this may be crossed by one or two small veins. Beyond this, at the apex itself, is found the remains of the normal reticulation of the elytron. (N.B.—In using the terms anterior, posterior, &c., the elytron is supposed to be stretched out at a right angle to the body).

Both elytra are constructed alike, and usually lie the right upon the left; they may be fully developed, or truncate (*Nemobius*). The wings give no important characters, and, in a state of rest, are generally carried folded up several times, with their apices projecting beyond the elytra; but sometimes they are shorter than the elytra (*Gr. campestris*) or even absent altogether (*Nemobius*).

The legs are formed much as in the *Locustidæ*, the posterior pair being used for jumping; while the anterior and middle pairs are as usual simply walking legs, with the exception of the genus *Gryllotalpa*, in which the anterior pair are modified into digging organs. The posterior femora are either slender and narrowing considerably towards the knee, as in *Œcanthus*, or robust, dilated towards the base, and wide and compressed before the knee, as in the other genera. The anterior tibiæ are without the longitudinal sulcus which is present in most of the *Locustidæ*. The external auditory foramen (tympanum) is of two forms:—1, equal on both sides (*Œcanthus*); 2, large on the outer (posterior) and small on the inner side (*Gryllus*, &c.); but in a continental genus (*Gryllodes*, Sauss.) it is absent altogether on the inner side. There are normally four apical spines on the anterior tibiæ, but these are not always present. In *Nemobius* and *Gryllus* the upper one on the posterior (outer) side is wanting; and though the four are found in *Gryllotalpa*, they are, together with the tibia and tarsus, much altered in appearance. In this genus the tibia is enlarged and compressed, convex on the outer and flat on the inner side; and the four apical spines are placed in a row, with their apices curved outwards and backwards; the tarsus is also much modified, the first and second joints are external and shovel-shaped, and the distal joint bears the usual pair of claws.

The posterior tibiæ bear spines along the shank, usually on both margins of the upper-side, sometimes only on the inner margins (*Gryllotalpa*), and the number of these should be noticed: they may be (1) many, as in *Œcanthus*; or (2) numbering four to six, as in the other genera; and these may be (*a*) fixed (*Gryllus*, &c.), (*b*) articulated (*Nemobius*), or (*c*) modified into a swimming organ (*Tridactylus*, not British). The apical spines must also be noticed, as they give several good characters by their varying size and position; they are beset with fine hairs.

The tarsi are 3-jointed, the first joint is long, the second very short, and the third bears the usual claws, which have no uniting membrane. The structure of the upper surface may be smooth and round, furrowed, or serrated.

The end of the abdomen and genital apparatus are not of much systematic importance, as in some of the other families. All the genera, except *Gryllotalpa*, *possess an exserted* ovipositor. The ♂ subgenital lamina bears no styles.

Table of Genera.

1 (6) Anterior feet adapted for walking; female furnished with an ovipositor.
2 (3) Posterior femora very slender ....i. *Œcanthus*.
3 (2) Posterior femora thickened.
4 (5) Spines of the posterior tibiæ slender, long and mobile. First joint of the posterior tarsi not sulcate above, nor serrate .... ii. *Nemobius*.
5 (4) Spines of the posterior tibiæ strong, fixed. First joint of the posterior tarsi sulcate above, and serrated on both sides ....iii. *Gryllus*.
6 (1) Anterior legs adapted for digging; ovipositor absent......iv. *Gryllotalpa*.

i.—ŒCANTHUS, Serville.

This genus is easily distinguished by its slender posterior femora, in fact, all the legs are not so robust as in the other genera. The posterior tibiæ are longer than the femora, and besides the usual long spines have numerous short ones. The single European species is flower-frequenting, and has a very loud chirp, which may be heard late into the night.

1.—Œcanthus pellucens, Scop.

Gryllus pellucens, Scopoli, Entom. Carniol., p. 32.
Œcanthus pellucens, Fischer, Orth. Eur., p. 165, tab. ix, figs. 14, 14*a*—*b*; Brunner, Prod. der Eur. Orth., p. 421, fig. 96.
Œcan. italicus, Fabr., Steph. Mandib., vi, p. 41.

Greyish-straw colour, with minute white hairs, and a few greyish-brown markings. Body narrow, depressed, elongate. Head horizontally produced, with the vertex passing gradually into the frons without a furrow. Ocelli absent. Antennæ very slender, much longer than the body. Pronotum elongate, sub-cylindrical, with the side lobes longer than deep. Elytra in both sexes longer than the abdomen; in ♂ dilated towards the apex, posterior margin rounded; harpa without oblique veins, speculum large, formed by two oblique veins, the whole area longitudinally striate, radial vein in both sexes giving 8—10 branches anteriorly. Elytra in ♀ narrow and acuminate. Wings, when folded, pointed posteriorly, generally longer than the abdomen, sometimes shorter in ♂. Legs slender. Anterior tibiæ with an open tympanum in either margin; posterior tibiæ longer than posterior femora, slender, in both margins above with a few long spines, and also numerous closely-set minute ones. Tarsi slender, compressed, first joint of posterior tarsi not sulcate or serrate above. Abdomen very narrow, supra-anal plate small. Cerci long, hairy. Ovipositor long, reaching beyond the cerci, nearly straight, somewhat clubbed at the apex, where there are numerous minute teeth, black. Length, 9—15 mm.

Stephens recorded the capture of a single specimen, taken by Mr. Haworth near Halvergate in Norfolk. Haworth's specimen, if it be genuine, and there be no error about it, is the only example of this species known to have occurred so far north. Brunner gives its distribution as all over southern Europe and in Asia Minor. Finot says it is fairly common in the south of France, and that he has taken it as far north as Fontainebleau. De Selys-Longchamps does not include it in his Catalogue of Belgian *Orthoptera*. Haworth's specimen may not have been British at all, or perhaps was wrongly labelled or placed in his collection, and, as has been said before, when Stephens saw it, it had been captured already "many years."

It should be looked for about August and September amongst the flower heads of thistles, &c., and is easily known by its slender build and pale colour.

ii.—NEMOBIUS, Serville.

In this genus the spines of the posterior tibiæ are long, slender, and moveable, not stout and fixed as in *Gryllus*. The first joint of the posterior tarsi is smooth above. The species in Britain (*N. sylvestris*) is easily distinguished by its small size and truncated elytra from the rest of our *Gryllidæ*. There are two other species found in Europe, but they have a shorter ovipositor and longer elytra, and neither of them is likely to be found here.

1.—NEMOBIUS SYLVESTRIS, Fabr.

Acheta sylvestris, Fabricius, Ent. Syst., ii, p. 33; Stephens, Mandib., vi, p. 40.

Gryllus sylvestris, Fischer, Orth. Eur., p. 183, tab. ix, figs. 6, 6*a*—*h*.

Nemobius sylvestris, Brunner, Prod. der Eur. Orth., p. 424, fig. 98.

Small size. Generally chestnut-brown colour, with paler markings; beset with fine hairs. Head short, black, with the sutures yellow between the eyes, forming a pentagonal marking, from the superior angle of which the pale streak is prolonged a short distance backwards. Eyes paler. Maxillary palpi with the terminal joint dilated, ending in a funnel-shaped excavation, of which the anterior lip is longer than the posterior. Pronotum with disc testaceous, and lateral lobes black. Elytra abbreviated, truncated, considerably longer than the pronotum in ♂, with no oblique veins in the harpa, and no transverse veins in the speculum; about the length of the pronotum in ♀, rounded on the inner margin (anal angle). Veins fuscous. Wings absent. Anterior tibiæ with an external auditory foramen only on the outer side. Posterior femora with pale markings. Posterior tibiæ with the spines long and moveable, six terminal, and three above in either margin, placed alternately. First joint of the posterior tarsi hairy, not sulcate above or serrate. Abdomen above with pale blotches, sometimes only showing as a row of dots down the centre. Cerci pale. Subgenital lamina in ♂ compressed, bluntly pointed. Ovipositor straight, reaching beyond the tibio-tarsal articulation. Length, 9—11 mm.

Amongst dead leaves in woods, July to October. This species was very common near Lyndhurst in September, 1887, and probably occurs in many woods in the south of England. It is found all over Central Europe, and in Spain and Algeria, and I have taken it plentifully in the wood at Meudon, near Paris.

iii.—GRYLLUS, Linné.

Brunner includes this genus, together with *Nemobius* and four other genera (unrepresented here), in the tribe of *Gryllidæ.* The thickened posterior femora and more simply spined posterior tibiæ separate the tribe from the *Œcanthidæ*, and *Gryllotalpa* is at once recognised by its large size and peculiar fore-legs. The chief characters which distinguish *Gryllus* from *Nemobius* are the strong fixed spines of the posterior tibiæ, and the sulcate and serrate first tarsal joint, and as far as British specimens go, they are of much larger size. The following enumeration of the chief characters of the genus will save repetition in the descriptions of the two species.

Head obtuse, transverse, with the space between the antennæ twice the breadth of the first antennal joint. Sutures sometimes pale. Eyes not prominent. Ocelli arranged in a triangle, which is sometimes (*G. campestris*) so flattened as to be almost a straight line. Pronotum hairy, transverse, depressed, emarginate, with the posterior border slightly curved; lateral lobes longer than deep, deeper in front than behind, inferior border with the anterior angle right, posterior angle rounded obtusely and surrounded by a lamelliform extension. Elytra fully developed, flat above; harpa with three to four oblique wavy lines; speculum with a curved line. Wings arranged in folds. Posterior femora robust, compressed, inferior border laminate. Anterior tibiæ with a long, oval, external auditory foramen (tympanum) behind (on the outer side), and a small round one in front (on the inner side). Posterior tibiæ shorter than the femora, above in either border with four to six strong fixed spines in addition to the apical spines. Apical spines six (three on either side), and of those on the internal side the lowest is the shortest. First joint of the posterior tarsi sulcate above, with a row of short spines in either margin; second joint very short. Supra-anal plate in both sexes elongate, rounded. Cerci long, hairy. Sub-genital lamina in ♂ subacuminate, compressed, in ♀ short, compressed. Ovipositor straight, longer than the abdomen, lanceolate at the apex.

TABLE OF SPECIES.

1 (2) Head very black, with no pale bands or lines. Ocelli arranged in a scarcely curved line .. .. 1. *campestris*, L.

2 (1) Head with pale bands and markings. Ocelli arranged in a triangle .. 2. *domesticus*, L.

1.—GRYLLUS CAMPESTRIS, Linné.

Gryllus campestris, Linné, Mus. Lud. Ulr., p. 124, Syst. Nat., ii, p. 695; Fischer, Orth. Eur., p. 178; Brunner, Prod. der Eur. Orth., p. 428.

Acheta campestris, Fabricius, Ent. Syst., p. 281; Stephens, Mandib., vi, p. 39.

Large size, robust, colour generally black. Head large, rounded, broader than the pronotum. Ocelli in a slightly curved line, the median very little below a line

joining the lateral ones. Pronotum with an almost obsolete median furrow extending two-thirds of its length; anterior border nearly straight, posterior border slightly bowed. Elytra rather longer than the abdomen in ♂, with a pale marking at the base, forming, when the elytra are folded, a pale transverse streak behind the pronotum; radial vein with eight branches, harpa with three to four undulating oblique lines; branches of the radial paler than the other veins. Wings shorter than the elytra. Posterior femora rosy-red below. Posterior tibiæ in the inner border above 5-spined (not counting the apical spines), with the superior inner apical spine somewhat larger than the middle one. Length of the body, 19—25 mm.
„ „ ovipositor, 12—14 mm.

In holes in a dry soil from May. This insect is of very retiring habits, and though often heard is seldom seen, and is probably widely distributed over the south of England. White, in Nat. Hist. Selborne, gives an interesting account of their habits, and says they may be taken by probing the holes in which they live with a grass stem, when they rush out and are easily captured.

2.—GRYLLUS DOMESTICUS, Linné.

Gryllus domesticus, Linné, Syst. Nat., ed. x, i, p. 428, Faun. Suec., p. 236; Fischer, Orth. Eur., p. 180, tab. ix, figs. 9, 9*a*—*e*; Brunner, Prod. der Eur. Orth., p. 432, fig. 99.

Acheta domestica, Fabricius, Syst. Ent., p. 280; Steph. Mandib., vi, p. 40,

Colour testaceous, with reddish-brown markings. Head reddish-brown, with two yellowish transverse bands, one between the eyes and the other near the anterior border of the pronotum; and with variable pale markings between the antennæ. Ocelli arranged in a triangle. Pronotum depressed, with minute hairs, and with some longitudinal pale markings, most marked in ♂; posterior border rounded. Elytra not reaching to the of apex the abdomen, with a fuscous streak near the upper border of the lateral portion; radial vein 3-branched, harpa with three to four wavy transverse veins. Wings perfectly developed; when closed, caudate, reaching almost to the apices of the cerci. Femora testaceous. Posterior tibiæ on the internal margin 5-spined (not counting the apical spines), with two the superior apical spines on the inner side of nearly equal length. Ovipositor long. Larvæ testaceous, with the pale head markings. Length of the body, 16—20 mm.
„ „ ovipositor, 11—15 mm.

The common house cricket.

iv.—GRYLLOTALPA, Latreille.

In this peculiar genus all the species are subterranean in their habits, and consequently have some of their organs (particularly the anterior legs) much modified. The female has no exserted ovipositor, she lays her eggs in loose heaps in the underground channels, and is said to stridulate as well as the male. One species is British.

1.—GRYLLOTALPA VULGARIS, Latr.

Gryllotalpa vulgaris, Latreille, Gen. Crust. et Ins., iii, p. 95; Stephens, Mandib., vi, p. 38; Fischer, Orth. Eur., p. 157, tab. ix, figs. 1, 1*a*—*i*; Brunner, Prod. der Eur. Orth., p. 451, fig. 107.

Gryllus gryllotalpa, Linné, Syst. Nat., ii, p. 693.

Acheta gryllotalpa, Fabricius, Syst. Ent., p. 279, Ent. Syst., ii, p. 28.

Reddish-testaceous, with fuscous markings. Head stretched out. Antennæ short, many jointed. Eyes prominent. Lateral ocelli well marked, median one abortive, frons not divided from the vertex. Pronotum large, shield-like, subovate, anterior margin slightly hollow, posterior margin bluntly rounded; disc slightly depressed in the middle, with a faint median line. Prosternum and mesosternum compressed, metasternum broad, forming a pentagon with the first abdominal segment. Elytra abbreviated, nearly alike in both sexes, but the ♂ has a distinctly marked anal knot, which is wanting in the ♀; radial vein with many branches. Wings fully developed, forming, when folded, two long processes, generally reaching beyond the apex of the abdomen. Anterior legs strong, forming a digging organ; trochanter produced into a pointed process; femora strong, compressed, sinuate in the inferior margin; tibiæ dilated, compressed, on the inner side below the superior margin with a slit-like external auditory foramen (tympanum), inferior margin with four strong teeth, sub-excavated, and with the apices curved outwards; tarsi compressed, triangular, adjacent to the outer side of the tibiæ, first two joints with strong teeth, distal joint small, cylindrical, with two small claws. Middle and posterior legs constructed as in the rest of the *Gryllidæ*. Posterior femora dilated, compressed. Posterior tibiæ shorter than the femora, with four spines on the internal border of the shaft, and with three internal and four external apical spines. Abdomen in ♂ showing nine segments, in ♀ seven, the seventh forming the subgenital lamina. No exserted ovipositor. Length, 35—50 mm.

This singular insect, the "mole cricket," occurs all over Europe, and though its subterranean habits conceal it from frequent observation, it seems probable that it is widely distributed in this country. Most of the localities from which I have heard of its capture are in the south of England. It should be looked for in damp soil, as in gardens, moist meadows, the banks of streams and ponds, and potato fields. Gilbert White (Nat. Hist. Selborne) in writing of the mole cricket, says, that in May he found in a chamber underground, about the size of "a moderate snuff-box"—which comparison, I dare say, appealed to every one in those days—at the end of several winding passages, about 100 eggs of a dirty yellow colour; he also tells us that towards evening in the middle of April it may be heard making a dull sound like a goatsucker, but not so loud. Curtis notices that the two appendages behind are used as antennæ when the insect is running backwards, which it easily does, and warn it of approaching danger. It will be interesting to know whether future investigation will bear out the truth of this observation, and it *may* be demonstrated that the cerci and the curious process formed by the folded-up wing in some of the *Gryllidæ* are terminal sensory organs in those insects which are accustomed to run in and out of holes where they cannot turn round. The long cerci in the *Blattidæ* suggest the same idea.

LIST OF THE BRITISH *ORTHOPTERA*.

Fam. I.—FORFICULIDÆ.

Labidura.

1. riparia, *Pall.*
    gigantea, *Fabr.*, *Steph.*

Anisolabis.

(?) 1. maritima, *Bon.*

Labia.

1. minor, *L.*

Forficula.

1. auricularia, *L.*
2. pubescens, *Géné.*

Chelidura.

1. albipennis, *Meg.*

Fam. II.—BLATTIDÆ.

Ectobia.

1. lapponica, *L.*
2. Panzeri, *Steph.*
    ericetorum, *Wesm.*
    var. nigripes, *Steph.*
3. livida, *Fabr.*

Phyllodromia.

1. germanica, *L.*

Periplaneta.

1. orientalis, *L.*
2. americana, *L.*
3. australasiæ, *Fabr.*

Fam. III.—ACRIDIIDÆ.

Mecostethus.

1. grossus, *L.*
    flavipes, *Gmel.*, *Don.*, *Steph.*

Stenobothrus.

1. lineatus, *Panz.*
2. viridulus, *L.*
    rubicunda, *Steph.*
    stigmatica, *Steph.*
3. rufipes, *Zett.*
4. bicolor, *Charp.*
5. elegans, *Charp.*
    ? dorsata, *Steph.*
6. parallelus, *Zett.*
    pedestris (Podisma), *Steph.*
    pratorum, *Fieb.*, *Fisch.*

Gomphocerus.

1. rufus, *L.*
2. maculatus, *Thunb.*
    biguttatus, *Charp.*, *Steph.*

Pachytylus.

1. migratorius, *L.*
2. cinerascens, *Fabr.*
    danicus, *L.*
    Christii, *Steph.*

Schistocerca.

1. peregrina, *Oliv.*

Tettix.

1. bipunctatus, *L.*
    Schrankii, *Fieb.*
2. subulatus, *L.*

Fam. IV.—LOCUSTIDÆ.

Leptophyes.

1. punctatissima, *Bosc.*
    autumnalis, *Hagenb.*
    virescens, *Steph.*
    Standishii (*Dale*), *Curt.*

Phaneroptera.

(?) 1. falcata, *Scop.*

Meconema.

1. varium, *Fabr.*

Xiphidium.

1. dorsale, *Latr.*

Locusta.

1. viridissima, *L.*

THAMNOTRIZON.

1. *cinereus*, *L.*
   aptera, *Steph.*
   clypeata, *Curt.*

PLATYCLEIS.

1. grisea, *Fabr.*
2. brachyptera, *L.*
3. Roeslii, *Hagenb.*
   brevipennis, *Charp.*

DECTICUS.

1. verrucivorus, *L.*
   Binglei, *Curt.*

Fam. V.—GRYLLIDÆ.

ŒCANTHUS.

(?) 1. pellucens, *Scop.*
italicus, *Fabr.*

NEMOBIUS.

1. sylvestris, *Fabr.*

GRYLLUS.

1. campestris, *L.*
2. domesticus, *L.*

GRYLLOTALPA.

1. vulgaris, *Latr.*

CORRECTIONS AND NOTES.

Vol. xxv, p. 358.—*Forficula pubescens*, Géné. With regard to this earwig, Mr. C. W. Dale has kindly drawn my attention to an old record by his father of which I had been ignorant. In "The Weekly Entomologist," vol. ii, Feb. 21st, 1863, p. 11, the late Mr. J. C. Dale mentioned that *Forf. pubescens*, Géné, had been taken in great plenty on the sea coast at Charmouth, and near Weymouth, in August and September. There is no description, and though the form of Mr. Dale's note suggests that it was not the first time he had referred to the species, I cannot find any previous notice of it.

p. 366, line 3 from bottom—for "pronotum," read "abdomen."

p. 367, line 10 from bottom—for "*E. ericetorum*, var. *nigripes*," read "*E. Panzeri*, var. *nigripes*."

p. 369, lines 17 and 18—The Cornish specimens of *Ect. Panzeri*, var. *nigripes*, which Mr. Porritt gave me were not as I supposed taken by him, but by Mr. James Eardley Mason, of Alford, who tells me that the exact locality was not Lelant but the adjacent Hayle towans, amongst wild thyme tufts. Mr. Mason kindly sent me the rest of his Hayle specimens, and also some he took at Tresco (Scilly Islands) in September, 1888, but all these are of the ordinary British form of *Ect. Panzeri*.

Vol. xxvi, p. 58, line 13 from bottom—"The peculiar characteristic of *Phaneroptera*," &c., for "*Phaneroptera*," read "*Leptophyes*."

p. 58, between lines 1 and 2 from bottom—insert *Acrida Standishii* (Dale MS.), Curtis, Guide Arr. Brit. Ins., ed. i, p. 67.

This seems to have been a manuscript name which the late Mr. J. C. Dale wished to give to the brown autumnal form of *L. punctatissima*, Bosc, and which Curtis inserted in his "Guide," intending to describe later, but subsequently abandoned. In the British Museum there is a copy of the "Guide" formerly belonging, I believe, to Mr. J. C. Dale, in which, opposite *A. Standishii*, is written (probably by Dale), "Glanvilles Wootton, Portland (B. S.)." The "B. S." most likely is for Benjamin Standish, after whom Dale wished to name the insect.

Throughout this paper I have given only those localities which I personally knew of, either through having captured the insects myself or having seen those captured by others, except in the case of the old records. So the account of the distribution is necessarily meagre, and this makes it the more desirable that Orthopterists should publish local lists, and record the occurrence of individual species; and it will give me great pleasure to help any collector, as far as I can, towards identifying specimens.

Wandsworth, London, S.W.:
June, 1890.

NEUROPTERA FROM THE ISLAND OF UNST.

BY JAMES J. F. X. KING, F.E.S.

Having spent the months of July and August of last year in the remote island of Unst (Shetland), devoting much of my time to the working-out of its Neuropterous fauna, it has occurred to me that a few notes might be of some interest to Neuropterists, for, excepting the records in this Magazine at pp. 91 and 153 of Vol. xxi by Mr. McLachlan of twelve species of *Trichoptera*, collected by Messrs. Briggs and Roper-Curzon, nothing is known regarding the occurrence of these insects upon this northern island.

The island of Unst (which is about twelve miles long by five broad) is the most northerly of the Shetland group, and, as a rule, has very moist summers from what I could learn from the natives, although last summer proved a notable exception, being the driest within the memory of the proverbial oldest inhabitant. Having thus far disposed of the climate, it will be well to give a few hints as to the accommodation to be had at Baltasound, the best point from which to work the island. The regular lodging house at which "commercials" and anglers, as well as "brothers of the net," put up is Mrs. Hunter's, where bed and board can be had for about 5s. 6d. per day. Mrs. Arthur also has two or three rooms for letting; from my experience people will be very comfortable at her house, and her terms are very moderate.

Although so far north, Baltasound is well supplied with the comforts of town, *i. e.*, a telegraph and post office with post three times a week, and two well supplied shops where most commodities may be obtained. There are two churches, "Free" and "Established," the former heated with oil stoves during cold weather, the latter, which is a large building, capable of seating 700 or 800 people, has only spiritual comforts, and is not much frequented, the stoves seemingly having the effect of drawing a large number of people from the establishment.

The island of Unst is well supplied with fresh-water lochs, the largest of which is Loch of Cliff, about three miles in length, where good trout fishing may be had; by the way, the fresh-water and sea fishing is free, as is also the rabbit, golden plover and snipe shooting. A first class road, with a branch to Belmont, extends from Baltasound to Uyeasound, there is also a good road from Baltasound in a north-easterly direction to Haroldswick, otherwise the moor has to be taken for reaching Burrafirth, Woodwick, &c., but in no case is the walking heavy.

The hills of Hermaness* 657 feet and Saxavord* 934 feet rise on either side of Burrafirth in the north, and overlook the Muckle Flugga lighthouse, which is erected upon a mere rock, and is the most northerly inhabited spot in the British Isles.

With regard to the chief object of my visit, I may mention that the absence of trees, long heather, or long herbage of any description, in which the insects might find shelter, rendered collecting *Neuroptera* a matter of some difficulty, as most of the specimens had to be obtained by searching under stones, &c. The late Mr. Edmondston planted about two acres of trees near his house of Haligarth, Baltasound; these trees he enclosed within a high stone wall, to the height of which the trees managed to struggle, when they bent their heads in a horizontal direction so as to escape the keen winds from the sea. In this plantation I found many insects, such as *Psocidæ*, *Hemerobidæ*, and *Chrysopa*, which, I have very little doubt, were introduced with the shrubs, as none of these are to be found elsewhere in the island. Dragon flies do not occur in Unst as far as I could learn. I asked several of the natives and showed them specimens, but they did not remember to have seen anything like them, and I think that if dragon flies did occur I must have seen them, as I had been at all the promising localities on very favourable days.

On my way to Unst I spent a couple of days at Lerwick, in the neighbourhood of which I was fortunate enough to capture a few insects, the localities of which I will add after the Unst localities in brackets.

I will now proceed with the systematic list of my captures.

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* Forming two of the three British localities where the Great Skua is still to be found. I saw several of these fine birds on both hills.

TRICHOPTERA.

PHRYGANEIDÆ.

Phryganea varia, F.—At Loch Watlee I took this species; the specimens were rather lighter than those from the Highlands of Scotland. [Occurs near Lerwick].

LIMNOPHILIDÆ.

Colpotaulius incisus, Curt.—A few pigmies occurred at Loch Watlee, and beside the burns at Crussafield. The males measure 11 mm. and the females 12½ mm. across the wings.

Limnophilus rhombicus, L.—A female, measuring 37 mm., of the ordinary form was taken at Vallafield.

L. marmoratus, Curt.—A small race of this, measuring 26 mm., occurs, in which there is not much difference from southern specimens, excepting size.

L. lunatus, Curt.—One specimen at Tonga Daal, small and dark, very similar to specimens which I have in my cabinet from Orkney, collected by Professor Trail.

L. ignavus (Hag.), McLach.—Ordinary specimens, calling for no special remark, occurred at Crussafield.

L. vittatus, F.—A prettily marked form occurred at Baltasound, in which the dorsal portion of the fore-wing is of a dark colour, while the costal portion is very light and transparent, with the pterostigma well marked.

L. affinis, Curt.—Very common in the ground at Haligarth and upon the stone walls on Crussafield. The wings were more or less sprinkled with dark dots, giving the insect a rather pretty look; the pterostigma was in all cases very dark. The specimens measured from 21—27 mm.

L. auricula, Curt.—Common by beating the bushes in Haligarth Gardens. I took a number of specimens measuring only 14 mm., but did not see any so small (12½ mm.) as the one Mr. McLachlan mentions as having been taken by Mr. Curzon.

L. griseus, L.—A specimen of the ordinary form occurred on Crussafield.

L. sparsus, Curt.—The specimens of this species were remarkable for the uniform colour of their wings, being either of a pale smoky-grey or a dark brown with a slightly darker pterostigma; some of the specimens reaching barely 18 mm. in expanse of wings.

Stenophylax latipennis, Curt.—This appears to be the commonest caddis fly in Unst; the cases with larvæ might be found in any quantity almost under any stone in the Lochs, and the fly could be reared by placing the cases in any vessel with a little damp moss. At night it was not a case of catching the fly but of turning it out of the net, as at every sweep along the short herbage bordering streams, lochs, &c., numbers might be bagged. Some of the specimens were very small, only measuring 28½ mm., ♂ & ♀. A few are light straw coloured, although the majority are of a more or less dark colour.

S. concentricus, Zett.—A few females of this were taken at Crussafield, being attracted by a white sheet spread for that purpose. Expanse of wings, 40 mm.

Mesophylax impunctatus, McLach., *var.* **zetlandicus**, McLach.—This occurred all over the Crussafield burns, and might be taken by sweeping after dark. I captured over a dozen of it.

Micropterna lateralis, Steph.—A male of this was taken at the beginning of July near Baltasound, which measured only 32 mm.

Halesus radiatus, Curt.—A few small specimens, measuring only 33 mm., were taken at Burrafirth towards the end of July by sweeping herbage at night.

Drusus annulatus, Steph.—This species was very common at night in various parts of the island; the specimens do not call for any special remark, excepting that some of both sexes measured only 16 mm. in expanse of wings.

SERICOSTOMATIDÆ.

Lepidostoma hirtum, F.—Common at Loch of Cliff, also at Crussafield [Taken near Lerwick].

LEPTOCERIDÆ.

Leptocerus fulvus, Ramb.—Common at Loch Watlee and Loch of Cliff; specimens not unlike those from the mainland of Scotland. [Abundant near Lerwick].

L. cinereus, Curt.—Common at Loch of Cliff. [Also taken near Lerwick].

Mystacides azurea, L.—Common at Loch of Cliff. [Also at Lerwick].

Œcetis ochracea, Curt.—Very pale specimens of this were taken at Loch of Cliff and Belmont Loch, much paler than any which I have seen from the mainland of Scotland or Ireland. [Also occurs near Lerwick].

HYDROPSYCHIDÆ.

Philopotamus montanus, Donov.—Occurred near Westing in the middle of July, rather dark in colour.

Plectrocnemia conspersa, Curt.—Taken in fair numbers in various places over Unst, such as Crussafield and Virdafield. Some of the specimens are of the normal size, but a little dark in colour.

Polycentropus flavomaculatus, Pict.—Very common at Burrafirth, Loch of Cliff, Loch Watlee, Hellier's Water, and Loch Belmont. Specimens did not vary much from southern, excepting that they are perhaps on the whole a little smaller. [Also near Lerwick].

Cyrnus trimaculatus, Curt.—Fairly common all over the island, as a whole the specimens were much darker and smaller than southern ones, a few expanded only to 11 mm. [Also from near Lerwick].

Tinodes wæneri, L.—Very common at many places, many of the specimens being small. [Common near Lerwick].

RHYACOPHILIDÆ.

Rhyacophila dorsalis, Curt.—Almost equally common with *Stenophylax latipennis* in the same localities. The specimens do not call for much in the way of remark, except that they may be a little smaller and much darker than those from the south. [Also at Lerwick].

Agapetus fuscipes, Curt.—Fairly common at Loch of Cliff by searching under stones; at Belmont Loch numbers might be obtained, measuring only 6½ mm., by sweeping the herbage.

HYDROPTILIDÆ.

Hydroptila sparsa, Curt.—Along the streams in Vallafield.

H. femoralis, Eaton.—Loch Watlee.

Oxyethira costalis, Curt.—Various streams that run into Vallafield.

NEUROPTERA-PLANIPENNIA.

HEMEROBIIDÆ.

Hemerobius orotypus, Wall., **subnebulosus**, Ste., **nervosus**, Fab.—A few of each occurred in Haligarth Grounds.

CHRYSOPIDÆ.

Chrysopa vulgaris, Schn.—One specimen occurred at Haligarth.

PSEUDO-NEUROPTERA.

PSOCIDÆ.

Clothilla pulsatoria, L.—Common in the houses.

Psocus bifasciatus, Latr.—Common in Haligarth plantation.

Elipsocus unipunctatus, Müll.—Very common in Haligarth plantation.

E. Westwoodii, McLach.—Ordel House among the honeysuckle, and in the Haligarth plantation.

PERLIDÆ.

Isopteryx tripunctata, Scop.—A small race of this was to be obtained by searching under stones along Loch of Cliff and Loch Watlee, some of the specimens measuring only 6 mm. [Also at Lerwick, but the specimens were much larger.]

Leuctra fusciventris, Ste.—Not uncommon at Loch of Cliff and by the streams at Hermaness. [Also near Lerwick].

EPHEMERIDÆ.

Clöeon simile, Eaton.—Not uncommon at Loch of Cliff and Loch Watlee. [Very common near Lerwick].

Centroptilum luteolum, Müll.—Common at Loch Watlee.

Baëtis tenax, Eaton.—Loch of Cliff, Vallafield, Burrafirth, Tonga Daal, and the streams on Hermaness. [Also common near Lerwick].

The following is a summary of the species collected in Unst and near Lerwick:—

	Unst.		near Lerwick.	
Trichoptera	32	species	10	species.
Planipennia	4	,,	—	,,
Psocidæ	4	,,	—	,,
Perlidæ	2	,,	2	,,
Ephemeridæ	3	,,	2	,,

207, Sauchiehall Street, Glasgow :
May, 1890.

NOTES ON THE METAMORPHOSES OF BRITISH *LEPTOCERIDÆ* (No. 2).

BY KENNETH J. MORTON.

SECTION OF ODONTOCERUM.

II.—ODONTOCERUM ALBICORNE, Scop.

Larva stout, nearly cylindrical; head large, oval; thoracic segments transverse, prothorax about same breadth as head, the succeeding segments becoming very gradually broader; first abdominal segment (exclusive of the lateral processes) about same breadth as metathorax, from the first segment the abdomen tapers only a very little towards the extremity,

Head sparingly hairy; clypeus long and very narrow; triangular piece very small and narrow. Antennæ minute, apparently two-jointed, the proximal joint stout, bearing towards its apex a single hair, the distal joint small. Labrum longer than broad; slightly hollowed and emarginate in front; fore margin with four blunt processes; a number of bristles above; ciliated lightly at sides and beneath. Mandibles irregularly triangular in outline when viewed from above or beneath; upper edge irregularly crenate; seen from beneath the left mandible has a tooth which is absent in the right (absolutely *in situ* the mandibles have a shorter and stouter look than they have in the figures, and they are less distinctly crenate). Maxillæ: the blade on its upper-side armed with three strong spines and numerous small hairs; beneath with several strong hairs as shown in fig.; palpi four-jointed, tapering, third joint longest. Labium (spinneret) conical, with two-jointed palpi.

Thoracic segments sparingly clad with hairs, which are most numerous on margins of plates. Pronotal plate straight in front, produced at sides into a strong tooth; posterior margin slightly excised, hind angles rounded. Mesonotal plate not extending so far over the sides as the plate of pronotum; front edge straight, hind one rather rounded. The plates of metanotum apparently less hard; they consist of a transverse one covering about one-half the length of the segment, and narrower than the plates of the preceding segments; behind this is a linear one, and there is also a small one above each leg. On either side of each segment there is the usual small plate to which the leg is attached. Legs: fore-legs comparatively long, and although the joints are dilated, they are not so much so as in the larvæ of the more typical forms of *Leptoceridæ*. The second and third pairs become in order, longer and more slender. All the coxæ ciliated with long hairs; femora with long hairs on the outer edge; femora and trochanters on inner edge with spinulose hairs, and also a few spines in the case of the fore-legs; tibiæ with a few hairs and two short apical spines; tarsi almost naked, with a few minute apical hairs in a bundle, and one or two longer hairs (the tarsi of the 1st pair are also serrate in an indistinct manner on the inner side); claws moderately long, with the usual basal spine. $11\frac{3}{10} : 14 : 15\frac{5}{10}$ represent approximately the proportions of the pairs of legs as to length.

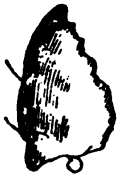
Abdomen with first segment sparsely haired; two lateral processes and one dorsal. The lateral fringe, composed of fine short hairs, runs from the 3rd to the 7th segment inclusive, and is represented on the 8th by a row of black points, from each of which arises one or two short adpressed hairs. The last segment, which is rather smaller than the others, has, above, a partially hardened plate, with a row of strong hairs arranged nearly in a semicircle ; it also bears the anal limbs, which are short and strong, with a large blunt simple claw ; the claw has a number of strong hairs, as have also the contiguous parts of the anal limbs (while these limbs are probably two-jointed, the second joint appears to me to be little more than the claw). The branchial tracheæ are strongly developed, and occur in dense fascicles on the anterior part of each segment from 2nd to 8th inclusive on the latero-dorsal and latero-ventral surfaces ; the 1st segment has in addition two latero-ventral fascicles, and the 2nd and 3rd segments a fascicle on either side in a line with the lateral fringe. These fascicles, as far as I can make out, are not composed of simple filaments, but consist of two or three main trunks, whence arise branches, which in turn break up into minor subdivisions.

Colours : greenish ; head almost white on the vertex, with a dark brown or fuscous *x*-shaped marking on the clypeus ; two lines, composed of fuscous dots or clouds, converging posteriorly. Pronotum yellowish, with darker nebulæ, and margined behind with black. Mesonotal plate yellowish, with light fuscous bands running lengthwise and transversely, and a few small darker dots ; also margined behind with black. Metanotal plates pale fuscous, with a few darker dots at either end ; posterior plate dark in the middle. Legs yellowish, basal parts with black lines and black dots on the proximal ends of the joints. The anal claws are also yellowish, with black lines on the adjoining hard parts. Abdomen purple-grey above, green beneath, respiratory filaments pinkish.

Nymph cylindrical, stout (especially in the ♀). Head transverse ; inter-antennal sulcus (so conspicuous in the perfect insect) distinctly marked. Antennæ long (as is usual in the longicorn *Leptoceridæ*), apical portion wound round the posterior end of abdomen. Fore part of labrum transverse ; base broader and sloping, with three hairs or so on either side ; a number of hairs at fore-angles and on the disc ; anterior margin beset with a close row of points. Mandibles with a strong basal part, which passes into a flat blade-like sharply dentate part, ending in a hook ; seen from the side only the broad base with a long slender hooked process is visible. Maxillary palpi incurved ; the two basal joints short, of about equal length ; the three other joints become gradually more slender. Labial palpi with first two joints short, third longer.

Thorax robust, the round scutellum of mesonotum distinct in nymphs nearly mature. Wing-cases long, the pointed apices reaching 6th abdominal segment. Tarsi of anterior legs sparingly, and those of median legs strongly, fringed on their inner side. Tibiæ and tarsi externally with minute blunt points at the joints.

Abdomen stout, after 7th segment becoming narrower. The 3rd to 7th segments inclusive have each anteriorly two dorsal plates, which bear a single, strong, backward directed, flattened, blunt tooth ; 5th segment posteriorly with two transverse and more closely approximated plates, each with three hooks directed forwards, one hook being placed at each hind angle and the other between (the last is smaller than the other two hooks, and may only occur in the ♀). Branchial trachæ in dense tufts on the anterior part of each segment, from 2nd to 7th inclusive, on the pleuræ, one tuft above and the other below the lateral line, and on the 2nd and 3rd segments an additional tuft placed intermediately. Lateral fringe short, just indicated on 6th segment, strong on 7th and 8th, passing to the ventral surface of the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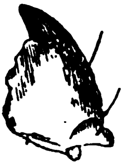
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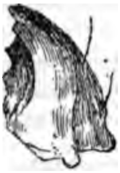
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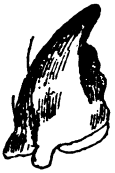
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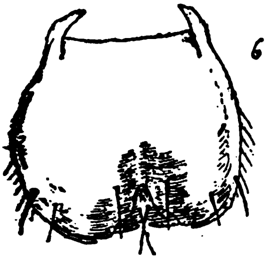
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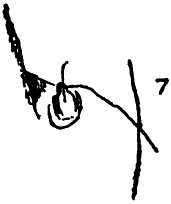
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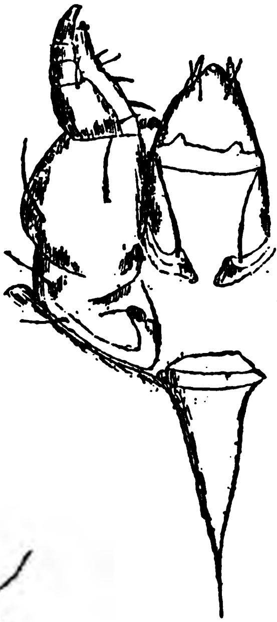
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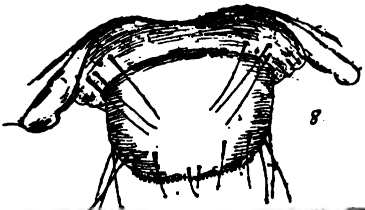
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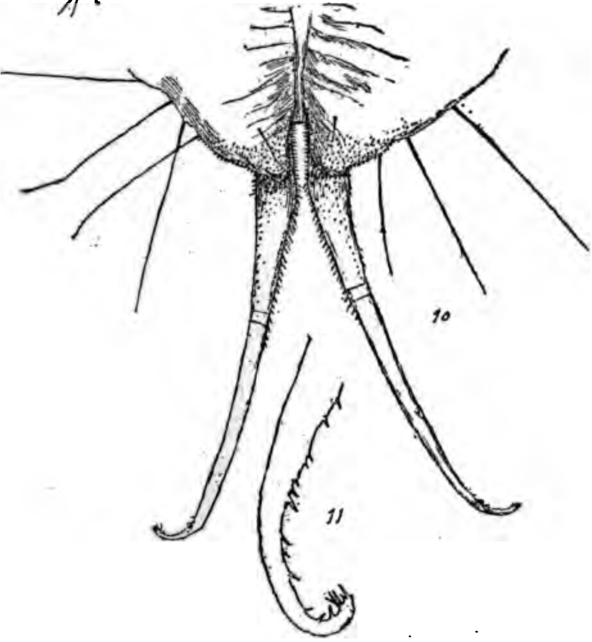
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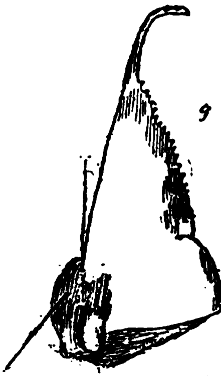
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latter, but not joining. The end of abdomen is conical; on the under-side (in the ♂) are two rounded lobes; the appendages long and slender, their apices upturned; about a third from the base is a marking simulating a suture; the base of appendages and contiguous parts of the abdomen densely covered with fine points, which are also present on the distal parts of the appendages in limited numbers.

The cases are curved tubes, compactly built of stony fragments and sand grains, and, considering the materials used, are rather smooth externally. In young examples they are conical; older cases taper very slightly and are truncate at the posterior end, which, in all those before me, is closed with a flat stone, at the sides of which are left small apertures. The cases much resemble those of *Sericostoma personatum*, but may be easily distinguished therefrom by their being less smooth, and by the manner of closing the end of the case, which, in *S. personatum*, is effected by a membrane with a round hole in the centre. The nymph cases are fixed in various ways to stones, the anterior end being usually closed by a single large irregularly shaped stone. The cases before me measure from 13 to 17 mm. in length, and the diameter in the largest reached the maximum of about 3¼ mm. and the minimum of about 3 mm.

Pictet gives an excellent figure of the larva on pl. xii, fig. 2, "Recherches" (*Mystacides cylindrica*); the perfect insect, his fig. 1 (*M. albicornis*) is almost certainly the ♀ of the species under review, but I have never seen a larva at all resembling that which stands beside it.

EXPLANATION OF FIGURES.

LARVA.

1. Mandible, left from above .... (Zeiss A³, e. p. 2).
2. do. right do. .... (do. do.).
3. do. left from beneath .... (do. do.).
4. do. right do. .... (do. do.).
5. Maxillæ and labium from beneath.. (Zeiss A, e. p. 1).
6. Labrum from above..................... (do. do.).
7. Antennæ .... (Zeiss C, e. p. 2).

NYMPH.

8. Labrum.................................. (Zeiss A, e. p. 1).
9. Mandible .... (do. do.).
10. Apex of abdomen from above......... (do. do.).
11. Apex of appendage more enlarged.

The note in brackets following the explanation of each figure indicates the objective and eye-piece used in making the relative drawing.

Carluke, N.B.: *April*, 1890.

ON THE BRITISH *MACRO-LEPIDOPTERA* WHICH HIBERNATE IN THE PERFECT STATE.

BY THE LATE R. C. R. JORDAN, M.D.

Many of our *Lepidoptera* sleep through the winter months, or pass through this portion of the year in a state more or less bordering on torpidity. The larvæ of some of these feed on deciduous trees, others on shrubs, others again on low plants; there is no bond connecting them together, they are gathered from all groups, save, of course, such *Bombyces* as have only rudimentary mouths, with them prolonged sleep would be impossible, for the simple physiological reason that they could have no store of food to fall back upon. In cases of true hibernation, the eggs are in all probability deposited after the winter is over; the process of ovipositing would be too exhausting for life to be prolonged much afterwards, nor would there seem to be any reason for such prolongation.

Hibernating insects must not be confounded with those which appear in the winter months, such as *Lasiocampa populi*, the *Hiberniæ*, and many others, curiously to these an apterous female, which is not easily blown about by winter storms, seems an advantage, but in truly torpid *Lepidoptera* the wingless protection never occurs.

Amongst butterflies, there is, first in order, *Gonepteryx rhamni*. Both sexes undoubtedly live through the winter, reappearing with the first bright days of spring; many interesting facts concerning this hibernation were brought forward in this Magazine in answer to a paper by Mr. Kenrick. The ova are laid generally in April or May; when impregnation takes place is unknown to me.

Colias Edusa.—Here we have a case of greater difficulty. The usually received opinion is the traditional one, that the female lives through the winter, and deposits her eggs in the spring. This is certainly not always true: I have myself twice watched the female depositing her eggs (or, rather, egg, for they are laid singly) on clover in October and November; but, is the winter sleep ever true, that is, in Britain? In the south of Europe, *Colias Edusa* may be met with on all the warmer winter days, but this only implies that it lives on by a kind of sufferance, just as it may be occasionally seen in Devon on a bright day in the very early part of November. That specimens of *C. Edusa* may be sometimes caught during June in England is certain, and that they may always be so found in Switzerland is equally sure, and once in the Rhone Valley a dilapidated female was seen by me depositing her eggs during that month; but all the June specimens, whether English or Swiss, are not so dilapidated, and it appears an open question whether they may not belong to an early brood? *C. Hyale* is decidedly double-brooded, but no one has ever suggested its hibernation; the winter sleep of *C. Edusa* seems to me "not proven:" perhaps my doubts may bring these proofs forward from other observers.

All the *Vanessæ* are more or less torpid during the winter, but this torpidity is very different in degree in different species; for example, *Vanessa urticæ* retires to rest very early in the autumn, long before warm days are ended, when many other butterflies are on the wing, yet it is more easily aroused from sleep than any of the others, and may, not rarely, be seen on some sunny day even in January; it can always be found in sheltered valleys during March and April; the same remarks as to early hibernation and early reappearance apply also to *Vanessa Io*, though by no means so forcibly; they apply in a still less marked degree to *Vanessa polychloros*. *Vanessa c-album* appears very late in the autumn, but soon commences its winter sleep, to fly again in early spring; *Vanessa Antiopa* is common enough in many Swiss valleys in June; all the specimens being, however, very much the worse for wear, yet the autumn migrations to our island in occasional years show that its early days of life are not passed in idleness. In all these species hibernation is the rule, and an autumn death exceptional, but the other two of our native species, *V. Atalanta* and *V. cardui*, though undoubtedly living through the winter, are never found in any numbers after this time, however abundant they may have been in the October previous. *V. Atalanta* is a hardy insect, often in the south of England to be seen feasting on the ivy blossoms early in November. These are the superficial facts about the sleep of these *Vanessæ*; but have we authentic and positive information as to when impregnation takes place, and when and where the eggs are laid? we presume in the spring, but has this presumption any basis of fact? It is difficult to fancy that no eggs are deposited by *Atalanta*, saving by the comparatively few which survive the winter. Pupæ and full grown larvæ of *polychloros* have been found by me in May, both in Belgium and Germany, probably from eggs of early spring. These are the only British butterflies which pass the winter months in torpidity. *Lycæna Phlœas* certainly does not hibernate, it may be sometimes caught late in October, and again seen very early in May, but these last are only exceptional instances, where the larvæ have fed up and pupated during a mild winter, and the insect has been produced before its usual time of appearance.

It seems to me that *Deilephila lineata* is the only *Deilephila* which lives through the winter in our islands. *D. celerio* is taken very late in the year, even in November, but, as far as my memory serves me, no spring specimens are ever recorded.

Macroglossa stellatarum regularly hibernates, coming into houses or barns where it may find a winter shelter; whether these examples are all females, or both sexes mixed, is unknown to me.

Sarrothripa revayana sleeps through the colder months, to reappear in the evenings of early spring. None of the *Bombycidæ* or *Arctiidæ* hibernate, as before said; where there is no mouth it would be physically impossible for them to do so, as there could be no store of nutriment laid up for the system to feed upon.

Agrotis.—Mr. Hellins always thought that *A. suffusa* lived through the winter, but the evidence of this never seemed to me quite sufficient; *suffusa*, it is well known, can be taken at sugar or ivy bloom up to a very late period of the year, and it may be caught again in May, but these specimens are, according to my idea, an early brood; and the same may be said of *segetum*, save that the autumn examples of *A. segetum* do not seem to occur every season. *Agrotis saucia* has also a brood in May.

Laphygma exigua undoubtedly lives through the winter, and is occasionally caught on sallow blooms; my late brother took one in June at sugar, close by Teignmouth, this was clearly a hibernated specimen.

Cerastis vaccinii, *spadicea*, and *erythrocephala* all live in a torpid or semi-torpid state during the winter months, and so do *Dasycampa rubiginea* and *Scopelosoma satellitia*: the phrase semi-torpid was used advisedly, because *Cerastis vaccinii* and *Scopelosoma satellitia* are not, according to my experience, very rare in holes and crevices of walls during December and January, and these specimens are only half asleep.

Oporinia croceago, like the *Glææ*, hibernates, and is taken on the sallow blossoms in early spring.

All the five British *Xylinæ* live through the winter, and lay their eggs in spring, so also do *Calocampa exoleta* and *C. vetusta*; my own knowledge is limited to the following facts, that the two *Calocampæ* and *X. semibrunnea* have been caught by me in April or May, and that the freshly-laid and fertile eggs of *X. furcifera*, *X. petrificata*, and *X. rhizolitha* have been sent to me in early spring; my information about *X. lambda* is only from books.

Dasypolia templi occurs throughout the winter, and comes to t on warm nights; when its eggs are laid is unknown to me.

Phlogophora meticulosa does not hibernate, it may be occasionally ught in almost any month; in this insect, and in *Plusia gamma* also, oods seem perpetually recurring, varying with the temperature, and e amount of possible food procurable by the larvæ.

Gonoptera libatrix retires early to its winter quarters, and becomes completely torpid; it may frequently be found in houses, cupboards, tunnels, or under bridges; it is active again in late spring, and its eggs are then laid, but when impregnation takes place is unknown to me. Many years ago I used often to visit a small cavern in winter, where *Vanessa urticæ*, *Vanessa Io*, *Gonoptera libatrix*, and *Alucita hexadactyla* were always to be found, and generally also *Rhinolophus ferrum equinum.*

Hypena rostralis becomes torpid very soon after its escape from the pupa, indeed, some that were reared by me seemed inclined to hibernate immediately; it reappears in the spring, and may be caught as late as June.

Amongst the Geometers, *Camptogramma fluviata* may be caught at light throughout a mild winter, it seems rather to live through the cold weather than to hibernate. The late Mr. Hellins once kindly sent me a batch of eggs laid in November, but as these proved not to be fertile, they give us little information.

Triphosa dubitata undoubtedly hibernates, and retires into outhouses, hay lofts, &c.; it flies actively in the spring, and may be caught about sallow blossoms. As recorded by me in the Ent. Mo. Mag., an injured female laid a batch of eggs in the autumn, but these either dried up during the winter, or were unfertilized.

Cidaria psittacata probably sleeps through the cold weather, but the only positive proof which I can give is beating it from thatch very late in the year. *C. miata* certainly truly hibernates; I have found it torpid in an outhouse, and have frequently caught the female in the spring.

Eromene ocellea is the only one of the *Crambidæ* which lives through the winter.

Amblyptilus cosmodactylus and *A. acanthodactylus* both hibernate, so does also *Pterophorus monodactylus* and, of course, *Alucita hexadactyla* This last little moth, in spite of its delicately feathered wings, enjoys a very long life in the perfect state, and may be me from August to May, if not even longer.

Amongst the *Tortrices*, all the *Leptogrammata* hibernate, unless we regard *Boscana* as a distinct species, and not merely a summer brood of *scabrana*.

Peronea mixtana lives through the winter; it is quite possible that some other species of the genus do the same, but no positive proof of this is known to me.

Simäethis pariana has been beaten from thatch by me as late as November, but has not been ever taken in early spring; the thatch specimens were probably only late survivors.

Many *Tineina* hibernate, especially in the genera *Cerostoma*, *Depressaria*, *Gracilaria*, and their allies, but my catalogue of these would be too incomplete, and too unsatisfactory for publication; indeed, this whole paper is written in the hope of eliciting information from others, rather than in the idea of imparting it, for in most cases it is self-evident that save in the simple fact of the winter sleep, this phase of insect life is to me a blank: "*hiatus valde deflendus.*"

Teignmouth: *January*, 1890.

Note on Macratria gigas, Mars.—During a recent study of the descriptions of the known species of *Macrabia*, for the purpose of working out the numerous closely allied Central-American representatives, I came to the conclusion that the Japanese *M. gigas*, Mars., had nothing to do with the genus. Mr. G. Lewis has kindly allowed me to examine the types of this, and of the other two species from Japan named by Marseul (Ann. Soc. Ent. Fr., 1876, pp. 447—449); and *M. gigas* proves to be a typical *Stereopalpus*, as defined by La Ferté (Monogr. Anthic., p. 4 and t. 18), Lacordaire (Gen. Col., v, p. 579), and Leconte and Horn (Class. Col. N. Am., p. 410 [1883]); the other two species, *M. serialis* and *M. cingulifera*, being true *Macratria*. *Stereopalpus* (= *Stereopselaphus*, Gemm. and Har.) has hitherto contained three species only, all from the United States; the genus differs from *Macratria* in the very long and cultriform apical joint of the maxillary palpi, and in the 9th and 10th joints of the antennæ being similar in length and breadth to the preceding joints (in *Macratria* they are stouter and more elongate than the preceding, and the apical joint is much longer than the 10th). The form of the antennæ, though so different from that of *Macratria*, is not mentioned by Marseul. Mr. Lewis has recently recorded a similar case of geographical distribution in another genus, *Phellopsis*. *Othnius* also has representatives in North America and Japan.—Geo. C. Champion, 11, Caldervale Road, Clapham, S.W.: *June 6th*, 1890.

Notoxus Krugi, Quedenfeldt: synonymical note.—In the Berl. ent. Zeitschr., xxx, p. 121 (1886), Quedenfeldt described a *Notoxus* from Porto Rico under the name of *Krugi*, he probably being unaware that Chevrolat, Bull. Soc. Ent. Fr. (5, vii, p. ix [1877]), had previously diagnosed the same species under the name of *bipunctatus*; the latter has, therefore, nine years priority.—Id.

Coleoptera at Ludlow and Bewdley Forest.—During last month I devoted about eight days to entomologising in the neighbourhood of Ludlow. I found the scenery charming, and the conditions all round very favourable for my pursuit; there was also the advantage of working on virgin soil, the entomologists of Ludlow being all *in futuro*. The Whitcliffe Woods, Bringwood Chase, Downton Castle Grounds, Clee Hills, Corve Dale, the valleys of the Teme and Onny, afford most delightful and productive hunting grounds, and the most energetic devotee to entomology would find plenty to occupy him here for months together. My time being limited, I could only look longingly on most of these enticing spots, and resolutely set myself to work in one of them, in the hope of being able to explore the others on some future occasion.

After carefully prospecting the country (on my tricycle), I chose the river Onny as the scene of my operations. This river is short and rapid, and along its course are banks of shingle which appear to have been thrown up during floods, and which at the ordinary levels of the water are more or less exposed. By careful working at a single one of these shingle-beds I found a large number of beetles, including about fourteen species not previously recorded from the Midlands.

The following are amongst the more interesting of my captures:—*Trechus longicornis* (2), *Perileptus areolatus* (abundant), *Hydroporus septentrionalis* (plenty), *Trichonyx Märkelii* (1), *Homalota currax* (scarce), *H. insecta*, *H. pavens*, *H. cambrica* (extremely abundant), *H. eximia* (in plenty), *H. fragilis* (a few), *H. longula* (plentiful), *H. delicatula* (a few), *H. subtilissima* (abundant), *H. luteipes* (scarce), *H. londinensis* (common), *H. hygrotopora* (common), *H. oblongiuscula* (scarce), *H. silvicola* (1), *H. debilis* (3), *H. fallaciosa* (3), *H. exilis*, *H. pallens*, *H. sodalis*, *H. cadaverina* (1), *Myllæna elongata* (abundant), *Philonthus fulvipes* (18), *Actobius signaticornis* (1), *A. prolixus* (very common), *Lathrobium angusticolle* (1), *Medon brunneus* (2), *M. ripicola* (2), *Scopæus ? sp.* (this fine *Scopæus*, l. 3½—4 mm., with antennæ as long as head and thorax, seems to be allied to *S. Erichsoni* and *S. lævigatus*, but the male characters are so different, as to make it impossible to identify it with either of these; it may prove to be new to our lists, but up to the present I have been unable to determine it; I found more than a dozen specimens), *Ancyrophorus omalinus* (scarce), *Thinobius linearis* (a few), *T. longipennis* (abundant). It was a great pleasure to me to find the two last named species, having never previously captured a *Thinobius*. Apropos of this I had an amusing experience. On reaching home I at once set about a microscopical examination of my specimens, and began by comparing my *T. linearis* with the only type of that species in my collection (presented to me as such by one of our leading collectors, and put in its place without question), when I discovered that this "type" was really referable to *Homalota subtilissima!* How easy it is to fall into error.

Under loose bark on an elm log in a wet place near Ludlow I found four specimens of the very rare *Acrulia inflata*.

Since returning from Ludlow I spent a few hours in Bewdley Forest, working a tributary of the Severn, characterized by shingly banks similar to those of the Onny, in the hope of finding at least some of the same species as in the latter locality. Nor was I disappointed, the curious thing being that in my numerous visits to Bewdley I never found them before. By carefully manipulating the shingle I secured the following amongst other species, several of which are new to that locality:—

Perileptus areolatus, *Homalota currax*, *H. fallaciosa*, *H. eximia*, *H. longula*, *H. londinensis*, *H. hygrotopora*, *H. oblongiuscula*, *H. pallens*, *H. subtilissima*, *Calodera umbrosa*, *Actobius signaticornis*, *Thinobius longicornis* (very abundant), *Actidium concolor* (this beetle is extremely plentiful here, but difficult to secure, as it instantly flies away when exposed), *Troglophaeus subtilis*? (my beetle seems clearly referable to this species, and I put the ? simply because of the apparent rarity of the insect); also the same *Scopaeus* as at Ludlow. *Myllæna elongata* was very abundant in the wet shingle, and *Homalota cambrica* so plentiful as to be a nuisance.

A note on my method of working the shingle may be useful. First of all I dam up a portion of the river so as to form a pool quite free from currents, then I lie down on the bank on an old mackintosh, and with a trowel dig down the shingle in small sections into the water, the beetles float on the surface and are easily picked out with a camel-hair brush and transferred to the bottle. I find it an excellent plan to line the tube of the bottle with blotting paper, the beetles are then so much more easily transferred from the brush.—W. G. Blatch, Knowle, Birmingham: *June* 11*th*, 1890.

Xysticus v. Pterostichus.—As requested by Mr. Douglas, I went out to-day in search of *Orthezia occidentalis*, which new species is so far only known by some few examples I found here last year in an ant's nest. I did not find my *Orthezia*, however, but under a board I found a most valiant *Xysticus*, with a specimen of *Pterostichus Luczotii*, Dej., in its jaws. The poor beetle was quite dead, and I doubt not that the spider killed it, as it was quite soft. I know not whether *Pterostichus* is included in the usual bill of fare of these spiders, but I was a little astonished that the *Xysticus* should attack and overcome such a well armed enemy, altogether bigger than itself. This *Xysticus* is one of the varieties of Thorell's *X. cunctator.* Thorell had only a single ♀, but the species is variable, so that his description does not fit many of the specimens one finds. The pale line on the legs, and the presence of some sort of a pale band on the cephalothorax, are apparently the only constant colour-characters. Our *Pterostichus*-conquerer I call var. or form *pallidus*, having a broad (about 1¼ mm. broad) pale dorsal band on the cephalothorax—this band without any distinct markings. The lateral bands of the cephalothorax are grey; the abdomen is obscurely marbled greyish and paler; the legs are pale. A rather opposite form, also found to-day, I call *nigrescens*. The dorsal pale band of the cephalothorax is marked much as in the type, but it terminates posteriorly in a point, not reaching the posterior end of the cephalothorax. The lateral and posterior areas of the cephalothorax are black, with a little pale marbling above the legs. The abdomen is obscurely marbled reddish-brown and paler; the legs are rather dark.—T. D. A. Cockerell, West Cliff, Colorado: *May* 12*th*, 1890.

Sphecophaga vesparum.—This very interesting ichneumon I received from Dr. Chapman on the 5th September last, also some comb of the nest of *Vespa vulgaris* from which it was bred. On May 7th I received another *vesparum* from him, and a few cells containing pupæ; these emerged a few days after, and in the comb sent last September there is still one in the larva stage.

In writing to him I remarked, what a wonderful provision of Nature for perpetuating the race, seeing that those that came out in the autumn had no chance of doing so; Dr. Chapman, in reply, suggested that whilst the wasps were vigorous the high temperature of the nest forced *vesparum* to develop rapidly, and there might perhaps be a succession of broods during the summer and autumn. When the wasps fail on the approach of winter and the temperature of the nest falls, those *vesparum* that are still larvæ hibernate in that state. At this stage the wasps throw out or devour their starving brood, and it is especially for these hibernating larvæ that the very strong upper margin of their cocoon became so necessary as a protection.

In looking at the autumn specimens for the first time, one is at once struck with the abbreviated wings, in comparison with the length of the body, 6 mm., the wings when expanded measuring only 9 mm., and I was rather surprised when I saw the spring form of *vesparum*, that by hibernation in the larva stage the length of the body had increased to 7 mm., and the wings in expansion to 13 mm., thereby giving the insect a more proportionate appearance and a better means of discovering a home for the next generation.

Curtis figures this insect under the name of *Anomalon vesparum* in Brit. Ent., pl. cxcviii, and, by the size indicated on the plate, it is evidently drawn from an autumn specimen.

Dr. Chapman asks if anything is known as to how *vesparum* eats the wasp pupa, of which it leaves the head and thorax *in sitû* and apparently intact, and yet has removed all the proper contents, what remains being only the skin filled with fluid, looking the ghost of its former self.—G. C. Bignell, Stonehouse, Plymouth: *June 6th*, 1890.

Food-plant of Phoxopteryx upupana.—For the last few years I have devoted considerable time each autumn searching for larvæ of *Phoxopteryx upupana*, but without success, until last September, when a small number were obtained, from which three moths have recently been bred.

The larva feeds on birch, unites two leaves, forming a flat, and decided circular, chamber, with its edges neatly fastened together, eats only the interior (*i. e.*, the upper-side of one leaf, and under of the other) of its domicile, and finally hibernates in one of these chambers, assuming the pupa state late the following spring.

German entomologists, I am informed, give elm as the food-plant.

Hitherto, I had looked for this larva on oak, supposing it would prove the food-plant, as the moths occur in two or three localities in this district in considerable quantities, generally flying round that tree on calm, sunny afternoons.

As so few larvæ were taken, and the risk being very great in getting some of those of the genus *Phoxopteryx* through hibernation, it was not considered advisable to describe them until it was ascertained they really were the above-named species; but this having been proved, I hope to be able to publish a description in the autumn. It was entirely owing to the suggestion of Mr. W. Warren that my attention was turned to the birch, and the food-plant of this species at last determined.—B. A. Bower, Lee, Kent: *June 18th*, 1890.

Lithocolletis anderidæ in Dorsetshire.—A letter received from the Rev. O. P. Cambridge, of Bloxworth Rectory, contains the interesting information that of this *Lithocolletis* (noticed by Mr. W. H. B. Fletcher, Ent. Mo. Mag., xxii, p. 40) he has bred several specimens this spring, from birch, in a wood at Bloxworth.—H. T. Stainton, Harrogate: *June 12th*, 1890.

Eupœcilia Manniana in the Isle of Purbeck.—On the evening of June 24th, 1889, I was fortunate enough to net a fine specimen of the above rarity as it was flying over one of the numerous bogs on our extensive tract of heath.—EUSTACE R. BANKES, The Rectory, Corfe Castle, Dorset: *June* 10*th*, 1890.

Eupœcilia Geyeriana in the Isle of Purbeck.—Two specimens of the very local *E. Geyeriana* also fell to my net last season whilst I was working some of our heath bogs—one of the first brood on May 31st, and a grand example of the second brood on August 19th. For the identification of these, and the *E. Manniana*, I am indebted to the unfailing kindness of Mr. C. G. Barrett.—ID.

Eupithecia extensaria.—I am glad to be able to report that I have reared a very nice lot of *Eupithecia extensaria* this spring, partly from eggs deposited last year in captivity, and partly from larva collected in the autumn. If any friend to whom I have promised the insect will communicate with me, I think I can furnish him with at least a type. Having removed from Norfolk I may not meet with the species again.—CHAS. G. BARRETT, 39, Linden Grove, Nunhead, S.E.: *June*, 1890.

Eupithecia consignata in Norfolk.—I took a specimen of *Eupithecia consignata* on an oak trunk in this place on May 12th. This is the first time that this local species has been noticed in the neighbourhood.—C. T. CRUTTWELL, Denton Rectory, Harleston, Norfolk: *June* 7*th*, 1890.

Habits of Biston hirtaria.—My experience entirely coincides with that of Mr. Barrett with regard to the habits of *Biston hirtaria* (*ante* p. 157). I have on several occasions during the spring, noticed on various trees in this neighbourhood which I pass daily on my way to the City, females of this species which have remained in the same position for a considerable period. I have also noticed a larger number of this species than usual this year.—HENRY A. HILL, 132, Haverstock Hill, N.W.: *June* 11*th*, 1890.

Mecyna in New Zealand.—The thanks of New Zealand Entomologists are due to Mr. E. Meyrick for so kindly informing them that they have hitherto confounded their species of *Mecyna* under the wrong name, calling the insect *M. polygonalis* in place of *M. deprivalis*. It should, however, be remarked that that gentleman has not at present enlightened them through the "Transactions of the New Zealand Institute" (the only generally accessible scientific periodical in New Zealand), as to the correct nomenclature, &c., of any of the family *Botydæ*. As to the assertion that Mr. W. W. Smith has confounded the Pyrale *M. deprivalis* with the Noctuid *Heliothis armigera*, it is almost needless to say to any one who knows Mr. Smith, that such a supposition is quite out of the question.—G. V. HUDSON, Wellington, New Zealand: *April* 30*th*, 1890.

The late Dr. Signoret's Collection.—In the 4tre trimestre of the "Annales de la Société Entomologique de France," 1889 (May, 1890) is a brief, but very interesting, obituary notice of this distinguished entomologist from the pen of his friend Léon Fairmaire. A foot-note announces that his collection is now in the possession of the Imperial Museum of Vienna. It is in good quarters; but it is to be regretted that such an important typical collection was not retained for France. —EDS.

Review.

THE LEPIDOPTERA OF LANCASHIRE AND CHESHIRE: by JOHN W. ELLIS, M.B., F.E.S. Reprinted from "The Naturalist." 8vo, 136 pp. 1890.

This is another very useful addition to the numerous local lists of British *Lepidoptera*, compiled with great care, nicely got up, and with a brief, but suggestive, introduction as to the physical and geological features of the two counties. These two counties have long been noted for the zeal of a band of entomologists, small in itself, but great as to results, residing in them. The local information given is very full. Those who are so inclined will find it instructive to compare the List with that given in Mr. Porritt's "Yorkshire Lepidoptera," on account of contiguity. For the two counties, 1355 species are recorded out of a presumed possible of 2079 as British, or 65 °/₀. The *Micro-Lepidoptera* have been admirably worked; it is not in many other districts of the same extent that 36 species of *Lithocolletis* and 52 of *Nepticula* have been observed; we take these two genera casually, as giving a proof of the energy of the local observers. Dr. Ellis and his fellow-workers are to be congratulated on this *resumé* of the results of their labours.

Obituary.

William Sweetland Dallas, F.L.S., died on May 28th, aged 66. Some months ago progressive paralysis developed itself, but he attended to his duties almost to the last, his death being due to an acute attack of the disease. He was a descendant of an old Scotch family, and was born in London on January 31st, 1824, the youngest son of an underwriter at Lloyds; was educated in University College School, and subsequently entered a merchant's office in the city. As a systematic entomologist he devoted his attention almost exclusively to *Hemiptera*, his first paper thereon having been published in 1848, in the Trans. Ent. Soc. Lond., which was followed by several others. Mercantile life did not suit his tastes. Afterwards he was engaged at the British Museum, preparing a Catalogue of the *Hemiptera*, of which parts i and ii appeared in 1851 and 1852, and stamped him then, and to posterity, as a systematic worker of the highest order. We believe he hoped to be placed on the permanent staff of the Museum; but it was not to be, and his original scientific research was thenceforward practically abandoned. He had lately married (1850), and the requirements of an increasing family compelled him to devote his life more especially to work of a more remunerative nature. In 1856, he published "A Natural History of the Animal Kingdom," which met with much success, and, in the following year, his "Elements of Entomology," equally useful in its narrower field. In 1858, he obtained the appointment of Curator* to the Yorkshire Philosophical Society, which he held for ten years, and then became Assistant Secretary to the Geological Society of London, a most onerous post, one with which he fully identified himself, dying in harness, and universally regretted, not only at the Society, but by a host of private friends outside the Society, his geniality and social qualities rendering him very popular. For 22 years he officiated at the Society. But Dallas furthered natural science in other ways. Having a good knowledge of languages, he translated, in 1858, von Siebold's "Parthenogenesis," a theory then looked upon as vastly heretical and impossible; later on, another important German work was translated by him, viz.: Fritz Müller's "Für Darwin" ("Facts and Arguments for Darwin"); and also others less entomological. In addition, he did a vast amount of scientific literary work of a critical nature, published anonymously, and largely in connection with the "Westminster Review." After the death of Dr. Lawson he became editor of the now extinct "Popular Science Review." We are not able to allude to a tithe of his literary work; but one of the most important of all his duties must not be forgotten, viz., that of an editor for many years of the "Annals and Magazine of Natural History," to which he contributed most of those translated abstracts of important foreign memoirs which became a feature in that old-established Journal. Neither must we overlook his contributions to the "Zoological Record," with which he was identified at its commencement in 1864, compiling the whole of the "*Insecta*" for five years, and partially for one year more.

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* In the "Bibliotheca Entomologica," Mr. Dallas is described as "Surgeon, in York." He never had any connection with the medical profession, and we can only surmise as to the *source of the error.*

We have previously said that Dallas' original scientific work has proved to be of the highest order; we regret that circumstances compelled him to abandon it. He became a Fellow of the Linnean Society of London in 1849, and for many years was a Member of the Entomological Society.

Mr. Dallas leaves a widow, three sons, and two daughters; to one of his sons we are indebted for some of the data as to early life.—R. McL.

Robert Coane Roberts Jordan, M.D.—We much regret to announce the death of Dr. Jordan, which occurred on the 24th of May, at Teignmouth. He was the second son of a solicitor at Teignmouth, South Devon, and was born June 29th, 1825, so had nearly completed his 65th year. It is a most unusual occurrence, but Robert Jordan's elder brother William, and his younger brother Charles, were like himself, all entomologists.

When, in 1841, that serial publication, "The Entomologist," intimated that it would shortly cease to appear, a number of entomologists from different parts of the country at once sent communications, at the same time expressing their regret at the probably speedy cessation of that publication. Two of these communications came from Teignmouth, one from the eldest brother, W. Hall Jordan, the other from Robert Jordan (then just 16); this was his first contribution to scientific literature.

In 1845, Robert Jordan came to London to prosecute his medical studies at King's College, and remained in London in connection with his duties of House-Physician at King's College Hospital, after his regular medical education was completed—completed with considerable distinction.

It was in 1849 or 1850 that we first learnt to know Dr. Jordan personally, and after a period of 40 years we have still a vivid recollection of the slender, pale-faced youth he then was. Slender and pale-faced he remained all his life, but his extreme delicacy, combined with a troublesome cough, rendered his health in the beginning of his medical career a matter of some anxiety to his family. As in the case of T. Vernon Wollaston, the mental energy helped to neutralize the weakness of the body, and when apparently overtired and quite exhausted, he was game for a discussion of some hours on any point connected with Entomology. In fact, with him

Entomology served its true purpose of a re-creation, and its re-vivifying influence had no mean share in maintaining the healthy activity of the distinguished physician.

When the period arrived for deciding on the locality in which to run his career, Dr. Jordan went to Birmingham, where he became medical tutor at Queen's College, and after several years of connection with public institutions at Birmingham, he commenced practising as a physician at Edgbaston about 1856, and remained there till failing health compelled him to leave in 1889. His services were soon in considerable request, and when overworked he sought relaxation by short continental trips. At first (in 1853) he went no further than the Rhine Valley, and we possess several specimens he brought from Königswinter; amongst them was a specimen of *Œcophora grandis*, Desvignes, which was not then known as occurring on the continent of Europe. He next extended his travels further, and went to several parts of Switzerland, carefully noting the habits of all the varied insects that came before him; and thus, when in later years he broke new ground in Norway, he was able to make comparisons between the appearance and habits of the same or allied species in Switzerland and in Western Scandinavia.

It has never been our fate to meet with an entomologist who possessed less of the *amor habendi* than Dr. Jordan; we believe he positively derived as much pleasure from seeing a rare insect, or a fine specimen in another person's collection, as from seeing it in his own! He was thus essentially *not a collector*, though he would at all times gladly exert himself to catch insects for his friends.

To all his friends and intimates the loss of such a man as Dr. Jordan will be felt for years.

We have mentioned Dr. Jordan's brothers, so we ought, perhaps, to add that the youngest, Charles, died of consumption many years ago. William, the eldest, is still living, a solicitor at Teignmouth, but we fear his active days of Entomology are gone for ever.

In 1857, Robert Jordan married Elisabeth Watson, who survives him; they had an only daughter, Emily, who is in good Entomological hands, having married Mr. G. T. Baker, F.L.S.

Societies.

Birmingham Entomological Society: *May 19th*, 1890.—Mr. R. C. Bradley in the Chair.

Mr. P. W. Abbott showed *Trachea piniperda* and *Eupithecia abbreviata* from Sutton Park. Mr. G. W. Wynn showed *Trachea piniperda* from Marston Green, from which locality it had not hitherto been recorded. A number of local captures of *Lepidoptera* were recorded in the book provided for the purpose.

June 2nd, 1890.—The President, Mr. W. G. Blatch, in the Chair.

Mr. G. W. Wynn showed *Bombyx rubi* from Sutton Park. Mr. H. M. Lee showed a small species of wasp, which was taken in the act of carrying away a large species of *Tipula*. Mr. R. C. Bradley showed a box of *Tortrices*. Mr. W. G. Blatch showed *Coleoptera* from Ludlow, new to the Midland list: *Trechus longicornis*, *Perileptus areolatus*, *Homalota fragilis*, *H. longula*, *H. delicatula*, *H. subtilissima*, *Actobius signaticornis*, *Lathrobium angusticolle*, *Medon ripicola*, *Thinobius linearis*, *T. longipennis*, *Acrulia inflata*, *Trichonyx Märkelii*, and a species of *Scopæus*, which may be new to science; Mr. Blatch also showed *Homalota fallaciosa*, *Acidota crenata*, and *Mycetoporus angulatus*, from Sutton Park, the last being new to the Midland list. Mr. H. Stone showed galls on yew, also some on a species of *Abies*; the latter being apparently produced by a number of minute *Acari* seated at the base of each leaf, and causing the stem to swell.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

ENTOMOLOGICAL SOCIETY OF LONDON: *June 4th*, 1890.—The Right Hon. Lord WALSINGHAM, M.A., F.R.S., President, in the Chair.

Mr. George William Carter, M.A., F.L.S., of Lime Grove, Knottingley, Yorkshire; and Mr. R. Newstead, of The Museum, Chester, were elected Fellows.

The Secretary exhibited, on behalf of Mr. J. Edwards, Norwich, two specimens of *Ilybius subæneus*, Er., and a single specimen of *Bidessus unistriatus*, Schr. Mr. Champion alluded to the fact that the only recorded British specimens of the first-mentioned beetle had been taken many years ago at Peckham. The species is very closely allied to *I. fenestratus*, F., but the posterior tarsi of the male have the joints externally margined at their lower edge, whereas in the male of the last-mentioned species they are not margined; this character was very plain in the male specimen sent by Mr. Edwards. Lord Walsingham, in alluding to the exhibit, referred to the list of Norfolk *Coleoptera*, compiled some years ago by Mr. Crotch, which appears to have been lost sight of.

Mr. Verrall exhibited a specimen of a fly in amber, belonging to a genus allied to *Psychoda*.

Mr. McLachlan alluded to the damage done by insects to orange-trees in Malta, and stated that the Rev. G. Henslow had lately been studying the question; one of the chief depredators was the widely-spread "fly," *Ceratitis citriperda*, well known as devastating the orange. He found, however, that another and more serious enemy was the larva of a large Longicorn beetle (*Cerambyx miles*, Bon.), which bores into the lower part of the stem and down into the roots, making large galleries; in all probability the larva, or that of allied species, is the true *Cossus* of the ancients. Lord Walsingham stated that a species of *Prays* allied to *P. oleellus* and our common *P. Curtisellus* was known to feed in the buds of the orange and lemon in Southern Europe. Mr. Pascoe, Mr. Champion, and others took part in the discussion which followed.

The Secretary, on behalf of Miss Carr, exhibited a portfolio of drawings of Indian *Lepidoptera* and their food-plants.

The following papers were communicated, and were read by the Secretary:—"Notes on the species of the families *Lycidæ* and *Lampyridæ* contained in the Imperial Museum of Calcutta, with descriptions of new species, and a list of the species at present described from India," by the Rev. H. S. Gorham; and "A Catalogue of the Rhopalocerous *Lepidoptera* collected in the Shan States, with notes on the country and climate," by N. Manders, Esq., Surgeon, Army Medical Staff. The latter paper contained a very interesting description of the chief physical features of the Shan States and neighbouring parts of Burmah.—H. GOSS and W. W. FOWLER, *Hon. Secs.*

R.

INSECTS AND *ARACHNIDA* CAPTURED IN ICELAND IN 1889.

BY P. B. MASON, M.R.C.S., F.L.S., &c.

During a stay in the south-west of Iceland, from June 19th to July 19th, I took the following species of insects. It is not so extensive as that published by Dr. Staudinger in the Stettiner Entomologische Zeitung, in 1857. That list was the result of the captures of three collectors from May 2nd to August 14th, 1856; they collected both in the north and south of Iceland, while my captures were principally in the neighbourhood of Reykjavik, which Dr. Staudinger says is the poorest district entomologically. I also made excursions to Thingvellir, the Geysirs, Reykir, and Krisuvik.

My captures amounted to 100 species of insects, Dr. Staudinger's to 312.

I have to thank Mr. Stainton for examining the *Gelechidæ*, Mr. McLachlan the *Trichoptera*, Mr. Bridgman the *Ichneumonidæ* and *Braconidæ*, Mr. Verrall the *Diptera*, and the Rev. O. P. Cambridge the *Arachnida*. Like Dr. Staudinger, I found no butterfly, and no *Orthoptera*.

LEPIDOPTERA.

Crymodes exulis, Lef.—Very abundant and variable, flying chiefly in the afternoon, and making short flights. I may remark here that there was no darkness during the time I spent in Iceland.

Triphæna pronuba, L.—One specimen; Reykjavik.

Noctua conflua, Tr.—Very abundant and variable; this was first described as a species from Icelandic specimens, and differs from the form usually called *N. festiva*, var. *conflua*, in British collections, by its smaller size; the only British specimens of this form which I have seen were taken by the late J. Sang at Wolsingham, in Northumberland.

Plusia gamma, L.—One specimen, at Reykir.

Larentia cæsiata, Lang.—Abundant, both light and dark forms.

Eupithecia scoriata, Stdgr.—One rubbed specimen, near Reykjavik.

Melanippe thulearia, Stdgr.—Five specimens only, at Thingvellir and Reykjavik; this is doubtless a northern form of *M. hastata*, with the markings suffused and brownish-black. *M. sociata*, Bork.—Not very common; one specimen has the whole of the ground colour brownish, and the band, if anything, rather paler than the ground colour.

Coremia munitata, Hb.—Everywhere in the bogs in swarms; this insect varies in every possible way, especially the female, the ground colour being in some specimens a creamy-white. *C. signata*, Hufn.—This was the first insect I captured, and looked very puzzling from the fact that the red colour of the bar is wanting; all the specimens were alike.

Crambus pascuellus, L.—Everywhere, in bogs.

Phycis fusca, Hw.—Reykjavik; this again looks quite a different insect from our specimens, as the ground colour is a light grey, and the markings approaching black.

Aphelia osseana, Scop.—Abundant and varying as usual.

Tinea rusticella, Hb.—Reykjavik.

Lita acuminatella, Sirc.—Reykjavik. *L. vicinella*, Dougl.—Reykjavik. *L. strelitziella*, H.-S.—The caryophyllaceous plants growing freely in the locality where this occurred at Reykjavik, were *Silene acaulis* and *Cerastium alpinum*.

Bryotropha terrella, Hb.—Reykjavik.

Endrosis lacteella, W. V.—Reykjavik.

Coleophora algidella, Zell. ?—One poor specimen.

COLEOPTERA.

Notiophilus biguttatus, F.

Bembidium bipunctatum, L.

Nebria Gyllenhalii, Fab.—Very abundant.

Patrobus hyperboreus, Deg.—One specimen.

Calathus melanocephalus.—v. *nubigena* only.

Cercyon melanocephalum, L.

Aleochara mœsta, Gr.

Homalota graminicola, Gr. *H. atramentaria*, Gyll.

Creophilus maxillorus, L.

Stenus —— sp. ?.—Larva only.

Aphodius lapponum, Gyll.—Very abundant. *A. fœtidus*, F.

Cryptohypnus riparius, F.

Otiorhynchus monticola, Gr. *O. scabrosus*, Marsh.

Coccinella 11-*punctata*, L.—Specimens all brightly coloured, and the lower pairs spots on the elytra confluent; four specimens only.

All taken near Reykjavik.

HEMIPTERA.

Salda littoralis, L.—Reykjavik.

Cicadula 6-*notata*, Fieb.—Reykjavik and Reykir.

TRICHOPTERA (*cf.* Ent. Mo. Mag., xxv, p. 421).

Agrypnia islandica, Hg.

Grammotaulius atomarius, F.

Limnophilus affinis, C. *L. griseus*, L.—Very abundant and variable. *L. pictus*, McL.

Apatania arctica, Boh.

HYMENOPTERA.

Bombus terrestris, L.

Meteorus ——sp. ?.

Mesochorus nigriceps, Thoms. ?.

Mesoleius ——sp. ?.

Limneria concinna, Holm.

And one very small Chalcid.

DIPTERA.

Sciara ——sp. ?; 2.

Simulium ——sp. ?; 8.

Chironomus aprilinus, Mg.; 21 ♂, 14 ♀; some of the dark specimens may be distinct. *C. riparius*, Mg., vel sp. aff.; 1 ♂, 2 ♀.

Cricotopus annulipes, Mg.?; 1 ♂, 3 ♀. *C.* ——sp.?; 2 ♀.

Orthocladius pubitarsis, Zett.??; 3 ♂, 2 ♀. *O. frigidus*, Zett.??; 5 ♂. *O. thoracicus*, Mg.; 5 ♀; one specimen may be distinct. *O.* ——sp.?; 2 ♀.

Tanytarsus ——sp.?; 6 ♂, 1 ♀. *T.* ——sp.?; 8. *T. flavellus*, Zett.?; 1 ♀.

Tanypus nebulosus, Mg.; 1 ♂. *T. ferruginicollis*, Mg.; 1 ♂.

Goniomyia ——sp.?; 1 ♀.

Rhypholophus nodulosus, Mg.; 1 ♂. *Rh. tephronotus*, Lw.?; 1 ♀.

Erioptera trivialis, Mg.; 1 ♂.

Symplecta punctipennis, Mg.; 1 ♂.

Limnophila Meigenii, Verr.; 1 ♂.

Trichocera maculipennis, Mg.; 1 ♂.

Tipula rufina, Mg.; 3 ♂, 3 ♀.

Platychirus albimanus, F.; 2 ♂, 5 ♀. *P. clypeatus*, Mg.; 1 ♂, 1 ♀; small and dark.

Syrphus unifasciatus, Zett.??, 1 ♀.

Cynomyia mortuorum, L.; 4 ♂; 1 ♀.—Settling on flowers, like a bee.

Calliphora erythrocephala, Mg.; 2 ♂, 5 ♀. *C. grœnlandica*, Zett.; 1 ♀.

Hystodesia variabilis, Fln.; 1 ♂.

Limnophora ——sp.?; 1 ♂.

Pegomyia ——sp.?; 1 ♀.

Homalomyia canicularis, L.; 1 ♂, 1 ♀.

Cœnosia ——sp.?; 5 ♀. *C.* ——sp.?; 1 ♂.

Scatophaga stercoraria, L.; 28 ♂, 14 ♀; all ♂, except five or six, very handsome, from bright, orange-red, long pubescence; 1 ♀ has frons all dark, except close to antennæ.

Cœlopa gravis, Hal.?; 1 ♂.—Nobody has known much about the genus *Cœlopa* (which is eminently a northern coast genus) since the days of Haliday. *C. simplex*, ?[illegible], Hal. *C. frigida*, Hn.; 4 ♂. *C.* ——sp.? 2 ♂, 1 ♀. *C. parvula*, Hal.?; 2 ♀ ; seem too large.

Fucellia fucorum, Fln.; 3 ♂, 4 ♀.

Blepharoptera modesta, Mg.?; 1 ♀?.

Gn.——? ——sp.?; 1 ♀.

Madiza palpora, Fln.; 2.

Scatella æstuans, Hal.?; 4.

Gn.——? ——sp.?; 4.

Gn.——? ——sp.?; 1.

Gn.——? ——sp.?; 1.

Borborus equinus, Hn.; 8 ♂, 16 ♀.

Limosina zosteræ, Hal.; 2.

ARACHNIDA.

Lycosa palustris, L.

Pirata piraticus, Clk.

One Phalangid, *Oligolophus alpinus*, Hbst.

Burton-on-Trent:
June, 1890.

ACULEATE *HYMENOPTERA* COLLECTED BY J. J. WALKER, ESQ., R.N., F.L.S., AT GIBRALTAR AND IN NORTH AFRICA. (PART I—*HETEROGYNA*).

BY EDWARD SAUNDERS, F.L.S.

It is needless to say anything in praise of Mr. Walker as a collector, as his powers in that capacity are so well known, but I feel it would be ungrateful not to thank him here very cordially for the interesting collection of *Hymenoptera* which he made for me whilst at Gibraltar and its neighbourhood. It is enough for most collectors to apply themselves specially to one order of insects; Mr. Walker appears to have applied himself specially to all; at any rate, the collection of *Hymenoptera* under notice is so rich in species, that I think it very doubtful if a specialist in that order, with the same opportunities, would have added many to it.

The present paper deals only with the *Heterogyna* or ants, amongst which Mr. Walker was very successful. The ants are a good deal more studied and collected than most of the other tribes of the *Hymenoptera*, and yet he has succeeded in obtaining two species new to science, one of which belongs to one of our rarest and most strikingly peculiar genera, viz., *Amblyopone*, of which hitherto only two species have been recorded from palæarctic regions; the other is a *Monomorium*, and although small and "critical," it has characters which distinguish it well from its congeners; besides these he has met with many species of rarity, and the winged forms of several, which are of very great interest.

When I wrote the following list I had not seen Prof. Forel's paper in "Comptes Rendus Soc. Ent. Belg.," April, 1890, p. lxi, *et seq.*, entitled, "Fourmis de Tunisie et de l'Algérie orientale," in which I see he has already described the ♂ and ♀ of *Camponotus Sicheli*, Mayr; his specimens, however, belong to the variety with the head and thorax in part red, whereas Mr. Walker's Gibraltar specimens are quite black. Professor Forel's localities are of course much to the eastward of Mr. Walker's, and he enumerates many species not found by the latter. Three genera, however, *Anochetus*, *Amblyopone* and *Myrmecina*, do not appear from the more easterly localities; the first of these, which used to be considered a great rarity, has turned up abundantly both at Gibraltar and Tangier under the sympathising eyes of Mr. Walker, although not even his attractiveness could induce the ♂ or true ♀ to put in an appearance, in fact, it was only in one or two nests *out of very many* examined that either Mr. Lewis or Mr. Walker were able to find even the curious transitional form between the worker and the true female, noted in this Magazine, vol. xxv, p. 61.

I have to thank Prof. Emery, of Bologna, to whom I have submitted all my difficulties, as well as Monsieur E. André and Professors Mayr and Forel, for most kindly helping me when I applied to them.

Family FORMICIDÆ.

Camponotus, Mayr.

micans, Nul.— ☿ major and minor, Tangier, under stones.

cruentatus, Latr.— ☿ major and minor, Gibraltar and Tangier, and one ♀, Tangier, under stones, in large communities.

rubripes, Drury : race *cognatus*, Sm.— ♂, ♀, ☿, major and minor, Gibraltar, and two ♂, Tetuan, one ☿, Tangier. The females of this race may be known from *sylvaticus* by their dull surface, and by the distinct channelling of the posterior tibiæ, also by the distinctly longer joints of the flagellum and the slightly longer metathorax ; the males are larger than those I have of *sylvaticus*, with paler antennæ and longer joints to the flagellum and paler tibiæ and tarsi ; the thorax also is distinctly longer, and the metathorax less suddenly declivous posteriorly. The genital armature, however, shows no characteristics of importance, the only apparent one being the greater divergence of the apices of the sagittæ.

Race *Alii*, Forel.— ☿, major and minor, Tetuan and Esmir, Marocco.

Race *sylvaticus*.— ♂, ♀, ☿, received only from Tangier.

Sicheli, Mayr.— ☿, a fair series, major and minor, from Gibraltar. ♀, a few females received with the above workers appear to differ from *lateralis* in having the metathorax slightly narrower posteriorly and not so abruptly declivous ; in colour they are black, with only the tibiæ, tarsi and antennæ pitchy. I sent one to Professor Emery, who pointed out the metathoracic character which had escaped my notice. ♂, with the other sexes I have received three males, one of which I have dissected, and the genital armature certainly differs distinctly from that of *lateralis* in being proportionately smaller, with the apical part of the stipites (corresponding to the lacinia in the *Anthophila*) slightly longer and narrower in proportion, and angulated longitudinally, and with the volsella distinctly shorter, narrower and more curved, not nearly reaching to the apex of the sagittæ. Prof. Forel remarks that the metathorax is slightly shorter than in *lateralis*.

Colobopsis, Mayr.

truncata, Spin.— ♂, one specimen only, from Tangier.

Myrmecocystus, Wesm.

viaticus, Fab. — ☿, four, Tangier, of rather small size.

pallida, Mayr.— ♂, one specimen, from Gibraltar, agreeing well with Mayr's description (Reis. Turk., ii, p. 9), and with the apical ventral valve shaped as in André's figure (Form. d'Eur., pl. ix, fig. 16). The laterally compressed genital armature is very characteristic, and distinct from that of *viaticus*. The stipites, looked at from above, are narrow and long, only slightly divergent and truncate at the apex, near which they are impressed with several very large punctures, and from the lower margin near the apex extends a lateral triangular process, nearly membranous at its base, scleritic and clothed with erect hairs as it narrows to the apex, the sagittæ are long, narrow and slightly divergent, each bearing a spine-like tooth on their inner margin.

cursor, Fonsc.— ♀, one, Gibraltar.

Formica, Linn.

fusca, Linn.—one solitary ☿, the only exponent of the genus, Gibraltar.

Lasius, Fab.

emarginatus, Oliv.— ♀, four, Gibraltar.

Plagiolepis, Mayr.

pygmæa, Latr.— ♀, ☿, several, Gibraltar.

Bothriomyrmex, Emery.

meridionalis, Rog.— ♂, ♀, abundantly, and a few ☿, Gibraltar.

Tapinoma, Foerst.

erraticum, Latr.— ♀, several, ☿, numerous, Gibraltar, the latter varying from the jet-black variety to the clear variety with pitchy-brown thorax and legs.

Family PONERIDÆ.

Anochetus, Mayr.

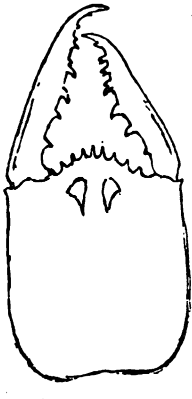
Ghilianii, Spin.— ☿, Gibraltar, sparingly, and Tangier, abundantly, and two of the intermediate form between between the ☿ and ♀, having ocelli like the ♀ but otherwise of the form of the ☿ (*cf.* Ent. Mo. Mag., xxv, p. 61), from Tangier. Mr. Walker remarks that although plentiful at Tangier, it is of no use as a host for Myrmecophilous *Coleoptera*.

Amblyopone, Erichs.

denticulata, Rog.— ☿, one, Gibraltar, one, Tangier, under stones.

Emeryi, *n. sp.* (for head, see fig.).—*Ferruginea, capite in medio nitente sparsim punctato, postice et lateribus confertim punctato, lineis obliquis elevatis inter puncta percurrentibus, genis ad basin mandibularum angulatis, clypeo antice convexo, spinulis sex armato tribus centralibus magis productis. Mandibulis elongatis, rectis, apicibus falcatis, dentibus 6-7 reflexis, simplicibus vel raro bifidis. Antennis longiusculis apice gradatim clavatis, scapo capitis basin haud attingente. Thorace nitido, sparsim et minute punctato, inter meso- et metathoracem constricto. Metathorace postice dilatato, apice truncato; abdomine nitido sparsim punctato.*

Long., 5 *mm.*



A small colony at Tangier, consisting of workers only.

In general appearance resembling the other two European species, but smaller and narrower than *impressifrons*, with a more shining surface, longer, thinner antennæ, and simple or rarely bifid teeth to the mandibles. From *denticulata* it differs in the rather larger size, the arrangement of the spines on the clypeus, and of the teeth of the mandibles, and the less opaque surface of the head.

Ponera, Latr.

contracta, Latr.— ♂, one, and ☿, several, Gibraltar.

punctatissima, Rog.— ♀, three, ☿, three, Gibraltar, also one ☿ possibly belonging to this species, but having extraordinarily developed eyes, as large in proportion as those of the ♀. I sent this specimen to Dr. Emery for examination, and he replied that if he had seen two examples of this form he should not have hesitated in considering the character specific, but having only seen one, he thinks it may be an individual anomaly.

Family MYRMICIDÆ.

MYRMECINA, Curt.

Latreillei, Curt.— ♂, two, Tangier.

TETRAMORIUM, Mayr.

cæspitum, Latr.— ☿, a few, from Gibraltar.

LEPTOTHORAX, Mayr.

tuberum, Fab., var. *luteus*, For.— ☿, several, Gibraltar, also a single ☿ and ♀ with the head dark, and the ♀ very small, not larger than the ☿. These I have communicated to Dr. Emery, but he does not think it would be wise to establish a new race on isolated examples.

nigrita, Emery.— ☿, a good series from Gibraltar, some with the metathoracic spines quite pale, var. *flavispinus*, André. It is this species which I quoted in error as *Rottenbergi*, Em., in Ent. Mo. Mag., xxv, p. 17.

recedens, Nyl.— ♀, two, and ☿, two, of this rare species from Gibraltar.

MONOMORIUM, Mayr.

Andréi, n. sp.— ☿. *Testacea, nitens, caput nitidissimum fere impunctatum subelongatum, postice leviter excavatum. Antennarum scapo capitis basin fere attingente, flagelli articulo primo quatuor segmentibus simul sumptis æquali, articulis* 2–8 *transversis brevissimis*, 9–10 *subæqualibus articulo apicali elongato quatuor præcedentibus longiore. Mesothorax nitidus, lateribus postice rugulosis; metathorax inermis, rugulosus planiusculus postice decliviter rotundatus. Abdomen nitidum, postice infuscatum petioli articulo primo brevi, postice valde tumido et rotundato, ruguloso, secundo rotundato ruguloso. Pedes flavi.* *Long.*, 2 *mm.*

Gibraltar, several.

Like *minutum*, Mayr, in shape, but differing in the colour and in the sculpture of the metathorax, also in the much more glabrous surface and the less pilose antennæ; from small workers of *gracillimum*, Sm., to which Prof. Mayr pointed out its resemblance, it differs in the much shorter intermediate joints of the flagellum, the longer head, and shorter 1st joint of the petiole.

Salomonis, L.— ♀, ☿, a fair series of each, Cap Negro, ☿, a very few, Gibraltar.

var. *subopacum*, Sm.— ♀, ☿, plentifully, Gibraltar.

APHÆNOGASTER, Mayr.

barbara, L.— ♂, ♀, ☿, common, Gibraltar and Tangier.

structor, Latr.— ♂, ♀, ☿, sparingly, Gibraltar.

pallida, Nyl., var. *Leveillei*, Em.— ♂, ♀, ☿, a fair series of the winged forms, but only five ☿, Gibraltar.

crocea, André.— ☿, a fair series from Gibraltar.

testaceopilosa, Luc.—This species has been sent in some numbers from Gibraltar and Tangier; it occurs in large colonies and is very active. The workers from Gibraltar appear to belong to typical *testaceopilosa*, those from Tangier appear to me to belong to the race *gemella* of Roger. With these workers I have received three distinct males.

1st, the ordinary ♂ of *testaceopilosa* (see fig. 2, profile, head and thorax) from Gibraltar, with eyes and ocelli of normal size, with the mandibles wide and flat, 6 to 7 toothed, with the metathorax produced at the apex on each side into a raised tubercle (as figured by André, Form. d'Eur., pl. xxiii, fig. 17) bearing long hairs, and sometimes terminating in a more or less developed spine, the femora very long and slender at the base, considerably thickened at a little distance from the apex.

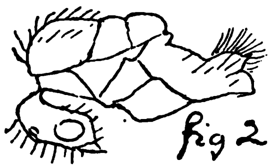


fig 2

2nd, a form from Tangier (fig. 3), resembling the above in size, colour and general appearance, but with enormous eyes and ocelli, with the mandibles feeble and narrow, having only three teeth, and with the horizontal portion of the metathorax very long and shining, and only very slightly tuberculated at the apex, the femora also are more evenly thickened throughout. This I believe to be the ♂ of *gemella*, Rog. I sent a drawing of it to Professor Emery for his opinion, and he agrees in thinking that it accords well with Roger's description. He kindly sent me a specimen of a ♂ from Algeria, which, although differing in having the horizontal portion of the metathorax slightly shorter, is, he thinks, clearly referable to the same race.

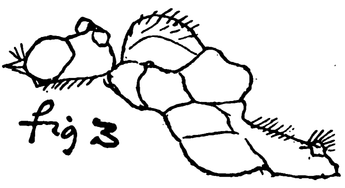


fig 3

3rd, a form from Tangier (fig. 4) resembling both the above in general appearance, size and colour, but with normal eyes and ocelli, 4-toothed mandibles, and metathorax shaped as in No. 2.

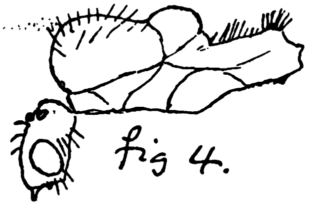


fig 4.

Of the ♀ also there are three forms, viz.:—

1st, the ordinary form from Gibraltar, as described by André.

2nd, a single specimen of a form from Tangier with much larger ocelli and larger eyes, and with the posterior portion of the metathorax more horizontal and the spines straighter. This I should refer to *gemella*, Rog.

3rd, a single specimen, rather smaller than the above, with normal eyes and ocelli, but with the metathorax similarly shaped, the spines almost horizontal.

sardoa, Mayr.—♀, Cap Negro, Tangier, Tetuan, ☿, Tangier and Tetuan, apparently abundant. Mr. Walker says this species occurs in comparatively small colonies, and is less active than *testaceopilosa*.

Pheidole, Westw.

megacephala, Fab.—♀, ☿, of race *pallidula* from Gibraltar.

Solenopsis, Westw.

fugax, Latr.—♂, ♀, Gibraltar and Tangier.

Cremastogaster, Lund.

scutellaris, Oliv.—♂, ♀, ☿, Gibraltar, ♂, Tangier; occurs in old trunks of trees.

sordidula, Nyl.—☿, Gibraltar.

St. Ann's, *Woking: May, 1890.*

ADDITION TO THE LIST OF BRITISH *HEMIPTERA*.

BY EDWARD SAUNDERS, F.L.S.

Amblytylus brevicollis, Fieb. Crit., 35.
fig. Reut., Hem. Gym. Eur., ii, p. 214, pl. iii, fig. 3 ♂.

♂. Elongate, greenish-grey, clothed with pale hairs; head slightly longer than the prothorax, greenish; antennæ brownish-grey, 2nd joint not quite so long as the 3rd and 4th together, slightly incrassated, 3rd about three-fourths as long as the 2nd, 4th not quite half so long as the 3rd; prothorax nearly twice as wide at the base as long, anterior margin about two-thirds the length of the base, sides nearly straight, their margins acute; colour greenish-grey on the disc, inclining to green round the callosities, and to pale ochreous at the sides; scutellum ochreous; elytra pale ochreous, a dark greyish shade covering the clavus and inner portion of the corium; membrane grey, cell nerves pale, cells slightly infuscate; legs greyish-ochreous, a few darker spots near the apex of the femora.

♀. Ovate; 3rd joint of antennæ subequal to the 2nd, this latter not thickened; surface of whole insect rather more densely pubescent than in the ♂, and of a yellower-ochreous colour, the darker shades of the elytra less pronounced; prothorax and head concolorous with the elytra, and without the greener tints of the ♂.

Length, 4—4½ mm.

By sweeping grass, &c., Woking, July, 1890.

The ♂ is easily known by its narrow form; the ♀ is very like that sex of *affinis*, but may be distinguished by its rather smaller size and the absence of the black bristly hairs observable in that species. Reuter only records this species from Corsica, South France, and Landes (Perris). It is interesting that the two species of *Amblytylus* recently introduced from Woking, viz., *delicatus*, Perr., and *brevicollis*, Fieb., should both be South European in their hitherto known distribution.

St. Ann's, Woking:
July 16*th*, 1890.

NOTE ON *ANDRENA TRIMMERANA*, KIRBY, AND *A. ROSÆ*, PANZ.

BY R. C. L. PERKINS.

In his recently published Catalogue of our Aculeate *Hymenoptera* Mr. Edward Saunders queries *Andrena rosæ*, Pz., as a variety of *A. Trimmerana*, Kirby. I have for some time been convinced that the former has no right to rank as a species, being merely (as suggested in the "Synopsis") the second brood of *A. Trimmerana*. The structural characters whereby the two have been distinguished are (1) the entire ventral valve of the 8th segment in ♂ *rosæ*, whereas in ♂ *Trimmerana* it is deeply emarginate; and (2) the simple impunctate (at least on its apical portion) apical dorsal valve in the ♀ of the former, which is distinctly punctured in *Trimmerana*, and has its margins somewhat reflexed.

First as to the females: not only is the sculpture of the apical dorsal valve of *rosæ* decidedly variable, but even typical *Trimmerana* is by no means constant in this respect. I have specimens of the latter in which the apical portion of the 6th dorsal segment is hardly, if at all, punctured, others in which the puncturation is very distinct. This common species has been much scarcer than usual this year, but the few females I have caught are all unusually strongly punctured.

My specimens of *rosæ* are not highly coloured varieties; in most cases the red colour is confined to the *apices* of the two basal segments of the abdomen, in some it is absent entirely, and, but for their paler pubescence, the resemblance of these to typical *Trimmerana* is extreme. One or two specimens are exactly like it, except in one particular, viz., the colour of the *scopa* beneath. In all my specimens of *rosæ* this is golden, whereas in typical *Trimmerana* the same part is silvery, but even here there is no constancy, for I have *Trimmerana* caught in early spring in which the *scopa* beneath is clothed with the golden hairs, which appear to be normal in the other. As to the sculpture of the apical dorsal valve of *rosæ*, in some specimens it is entirely impunctate, in others it is so on its apical portion; others again have it distinctly punctured even on this part.

There seems to be no correlation between the height of coloration and the smoothness of the valve, for in some specimens which have no red coloration at all it is impunctate, while the most highly coloured specimen I possess has it distinctly punctured all over as in *Trimmerana!* The reflexion of the edges of the apical dorsal valve in both forms is no more to be trusted than the puncturation, as it is similarly variable.

With regard to the males, I have *no* ♂ *rosæ* with an entire apex to the 8th ventral segment. In all it is emarginate, more or less, as in ♂ *Trimmerana*. In one specimen, however, the emargination is very shallow, and a comparison of others shows this character to be variable, as in the other species of *Andrena*, *e. g.*, *A. Gwynana*, var. *bicolor*, Fab., and *A. angustior*, Kirb. In the former of these the 8th ventral segment may be truncate or emarginate at the apex, in the latter rounded, truncate or emarginate!

Finally, as to the structure of the cheeks, my specimens of both *Trimmerana* and *rosæ* are eminently variable. Mr. Saunders has long since sunk *A. spinigera*, Sm., as a variety of *Trimmerana*, and I may mention that I have ♂ *Trimmerana* with the ordinary brown-haired face, which have a distinct spine on the cheeks clearly visible to the naked eye, and moreover, one of my specimens of *rosæ* has them equally distinct. It therefore seems certain that *Trimmerana* and *rosæ* are merely first and second broods of one species; the second brood only appearing in certain localities, and perhaps certain seasons.

As an instance of a second brood appearing in a more southern locality, I may mention that in 1886 on the South Coast *Nomada succincta*, Pz., emerged in thousands in August; while neither in that season nor in any other has a second brood appeared here in North Wilts; the effect of hot seasons in producing an abnormal second brood is well known, several species of *Andrena* and *Nomada alternata*, Kirb., being most commonly affected.

Sopworth Rectory, Chippenham :
May 21*st*, 1890.

GLYPTA CICATRICOSA, R., *G. FLAVIPES*, D., ♀, AND *G. RUBICUNDA*, N. SP., NEW TO BRITAIN.

BY JOHN B. BRIDGMAN, F.L.S.

Glypta cicatricosa, Rtz.

Ich. d. Forst., ii, 103.

I detected a fine female of this species among some ichneumons sent to me to be named by the Rev. E. N. Bloomfield, of Guestling, and who very kindly gave me the specimen.

Ratzeburg's description of this, and his other new species of *Glypta*, having the scutellum and thorax marked with yellow, are not so clear as they might have been ; both species are very different from the common *G. flavolineata*, G., and may easily be distinguished as follows :—

Middle segments of abdomen subquadrate ....*flavolineata.*
" " " " distinctly longer than wide...*evanescens.*
" transverse............*cicatricosa.*

Glypta flavipes, Desv.

Mus. Cat., 75, ♂.

Mr. E. A. Atmore gave me both sexes of this species, which he bred from *Antithesia capræana*.

The female is very like the male, but the scape beneath is not yellow, and all the coxæ and trochanters are red, the aculeus is almost as long as the abdomen, in both sexes the face and clypeus are pubescent, the second and third segments of the abdomen are subquadrate.

GLYPTA RUBICUNDA, *n. sp.*

Niger, abdominis medio plus minusve rufo, pedibus rufis basi nigris, aculeo abdominis longitudine, clypeo tomentoso.

Rather shining; head transverse, somewhat oblique behind the eyes, antennæ about two-thirds the length of the body, clypeus with long dense pubescence.

Thorax finely punctate, areæ of metathorax very indistinct or absent. Abdomen long and slender, as wide as the thorax, subopaque, very finely punctate; first segment nearly twice as long as wide, second and third about one-fourth longer than wide, the diagonal lines are shallow, extending only about two-thirds the length of the segment, very faintly impressed in the fourth segment, the aculeus very little longer than the abdomen. Wings without an areolet, transverse anal nervure almost straight, interrupted below the middle.

Black; the female has the first three segments of the abdomen dull red, the second segment only of the male is sometimes more or less obscurely dull red, sometimes entirely black. Legs red, coxæ and trochanters black, apex of hind tibiæ and hind tarsi blackish, base of latter reddish. Tegulæ and tubercles yellow, stigma reddish, with a thin fuscous border. Male and female. Length, 12—13 mm.

Both sexes were kindly given to me by Mr. G. Elisha, who bred them from *Argyrolepia maritimana*.

The species is very distinct, and easily recognised by the pubescent clypeus, length of abdominal segments, and colour of legs and abdomen.

St. Giles Street, Norwich:
June, 1890.

NEPTICULA TORMINALIS, A SPECIES NEW TO SCIENCE.

BY JOHN H. WOOD, M.B.

Al. exp., 2¼ lin. Inner half of fore-wing pale golden-brown, followed by a broad, straight, brassy fascia, ill defined on its inner edge; apex of wing purple. Head black, with white eye-caps. Antennæ half as long as fore-wings, just reaching, when the insect is at rest, to the commencement of the fasciæ.

Larva pale yellowish. Head blackish, sockets in which the posterior lobes work black, appearing as a pair of black spots behind the head; a row of linear brown marks down the middle of the ventral surface, not noticeable when in the mine. Egg on the under-side of the leaf of *Pyrus torminalis*, in an interspace between the ribs. Mine beginning as a fine straight gallery, then becoming wide and twisting, almost widening into a blotch before its termination. Frass collected into a narrow central line. Cocoon dark brown.

This insect is very like *regiella*, so much so indeed that it has been necessary to use almost the very terms in which the latter has been described in the "Manual." It is, however, a trifle larger, and the tone of the colouring not quite so deep; but the character that serves at once to distinguish it is the black head, that of *regiella* being red. The larva, mine and food-plant are also quite different, and it is besides a single brooded species, the mines occurring in July. Although its food-plant grows here more or less plentifully in all the woods, I can only find the insect in one small corner of one of them. In this very limited spot it is fairly common, nearly every bush having a few tenanted leaves, with occasionally two or even three mines in a leaf.

Tarrington, Ledbury:
July 10*th*, 1890.

THE GENUS *SCOPARIA*.

BY EUSTACE R. BANKES, M.A., F.E.S.

With reference to the question of *S. ambigualis* and *atomalis*, the difference between Mr. C. A. Briggs and myself as to what constitutes "proof" seems to have been caused by Mr. Briggs having suddenly changed his ideas on the subject; for, after stating in Entom., xxii, p. 16, that, "if entomologists working near the junction of the Highlands and Lowlands *would but collect these species for comparison*, THE MATTER WOULD SPEEDILY BE SETTLED," he now expresses doubts as to whether the question can be settled "satisfactorily or otherwise" by a study of the *appearance* of the insects themselves! To my mind, however, the evidence furnished by the appearance of a long series, showing *every possible intermediate form*, is amply sufficient for sinking *atomalis* as merely a variety of *ambigualis*. Species (as they have once been considered) are being continually relegated to the rank of varieties *on precisely the same amount of evidence, if no good reason for retaining them can be shown*; and though it would be very *interesting* to "breed from the egg," I doubt whether it would be considered at all *necessary* by a jury of practical entomologists with all the evidence before them. Unless we have about a dozen different species confused together as one, *some* out of a number of bred *atomalis* would be *quite certain* to "approach *ambigualis*, and *vice versâ*," else how can the existence of the whole range of exactly intermediate forms be accounted for?

It would appear from his statement on p. 124, lines 6—11, as though Mr. Briggs had written his note in Entom., xxii, p. 16, *after* he had compared a large number of specimens in January, 1889; but this clearly cannot have been the case, as his note in Entom. is dated December 10th, 1888, and was published in the Magazine *for January*.

In the matter of *S. mercurella* and *cratægella*, Mr. Briggs is astonished that I should "confess" that the easiest way to pick out the two species from a mixed series is by the eye! But, surely, the *quickest* way in such a case is naturally the *easiest*, and I neither *stated nor implied* that it was the *surest* or the *only* way;—far from it!

Mr. Briggs has *misquoted* and apparently misunderstood my remark that the differences pointed out "become *intensified or* modified as the opposite extremes of variation are approached." This must *necessarily* be the case *when series of any two allied species, which vary much in colour and markings, are compared together.*

I consider that the characters of the second line and the pale line which follows it afford the "peculiar characteristics" of *cratægella*, which are never shown in *mercurella*, and that an examination of those lines will *always* reveal the identity of any specimen. Of the distinctions mentioned on pp. 99—101, my belief is that the special points referred to in 6 and 7 *invariably* hold good, that no specimens are forthcoming to disprove those in 3 and 5, and that no two series of the two species in question will disprove the remainder. I can only repeat that "in every instance I believe that *several* of the points will be found to hold good," namely, 6, 7, and one or more of the rest, which are not quite invariable, though they hold good as a rule.

It has been suggested to me, and apparently with good reason, that *cratægella* is a *more finely-scaled* species than the other, and that this may account in a measure for its peculiarly neat appearance which the eye readily grasps; the point seems worthy of careful attention, and further investigation.

The present difference between Mr. Briggs and myself seems to lie in the fact that he has seen specimens "which might with equal confidence be referred to either species;" and finds it "impossible to distinguish the intermediates;" whilst I, on the other hand, have in vain searched everywhere, both in nature and in cabinets, for specimens which, to my eye, are truly "intermediate," or equally referable to either species. It seems to me that although, as is of course natural, the two species vary in the same directions (though not, in so far as is known, to the same extent), *the parallel forms of each are all quite distinguishable throughout.* Let us hope that before long a critical comparison of the larvæ, and of the anal appendages of perfectly fresh specimens, may reveal the truth, and set the matter at rest; but it seems clear that for the present, at any rate, Mr. Briggs and I must "agree to differ" on the subject.

Erratum.—Page 100, line 7 from top, *for* "almost invariably," *read* "generally."

The Rectory, Corfe Castle:
May, 1890.

[No useful purpose can be served by continuing this controversy at present. If any entomologist can bring forward facts concerning life-history, or special points of structure, we hope he will make them known.—Eds.]

PASTOR WALLENGREN'S CLASSIFICATION OF SCANDINAVIAN *TRICHOPTERA*.

BY ROBERT McLACHLAN, F.R.S., &c.

An annotated List of Scandinavian *Trichoptera*, by my old and much-valued correspondent, Pastor Wallengren, has been in course of publication in the "Entomologisk Tidskrift" since 1880, and has just been completed. The first part appeared in Vol. i, pp. 64—75 (1880), and included the *Phryganeidæ*; the second in Vol. v, pp. 115—129 (1884), enumerated the *Limnophilidæ*, *Apataniidæ*, and *Sericostomatidæ*. This was followed in Vol. vii, pp. 73—80 (1886), by a special paper on the newly-erected Family *Apataniidæ*. The concluding part is in Vol. xi, pp. 1—10 (1890), and includes the "*Æquipalpina*."

The sequence followed throughout is practically that of my "Revision and Synopsis." But Pastor Wallengren in all his entomological writings has always showed distinct independence and originality —traits observable in this List,—and as his work is perhaps not accessible to all our readers, I think it may be useful to give a brief analysis. About 160 species are given as Scandinavian.

As he has taken my "Revision" as a basis, I proceed to remark on the deviations:—

Firstly, as to Families The *Phryganeidæ* remain intact. The *Limnophilidæ* are split into *Limnophilidæ* and *Apataniidæ*. The *Sericostomatidæ* remain undivided. The *Leptoceridæ* are divided into *Molannidæ*, *Leptoceridæ*, and *Beræidæ*. The *Hydropsychidæ* into *Hydropsychidæ*, *Philopotamidæ*, and *Psychomidæ* *Rhyacophilidæ* and *Hydroptilidæ* are undivided. No special Family characters are given, save for *Apataniidæ*, and Wallengren has evidently largely acted on my often repeated suggestions that several of my "Sections" would, no doubt, hereafter be elevated to the rank of Families. I hesitated to take the bolder course, until more had been published on the *Trichoptera* as a whole. In all his writings, Pastor Wallengren relies largely on neuration, and, on this point especially, I am rather surprised (but not sorry) to find the *Sericostomatidæ* remaining intact.

Secondly, as to Genera. The chief divergences from my own plan are in the *Phryganeidæ*, where we find *Neuronia* subdivided into *Neuronia*, *Oligostomis*, and *Holostomis* (all old terms with somewhat new applications), and *Phryganea* into *Phryganea*, *Dasystegia*, and *Trichostegia* (to which almost the same remark applies); these changes were commented upon, and to some extent adopted, in my "First Additional Supplement" (1884). The only other generic change is in *Apatania*, in which the original name is retained for *A. Wallengreni* and allies; *A. fimbriata* and allies being placed in a new genus (or sub-genus) termed *Apatelia.* This latter division seems scarcely necessary, but is tolerably natural, save that the character in the neuration, viz., the termination of the sub-costa and radius in the posterior wings (*my* terminology) is not constant in a series of individuals of *A. fimbriata.*

Thirdly, as to Species. This is important. The changes are not many, but serious, and depend mainly on the identification of species described by Linné as Scandinavian. It is an old controversy, and was again brought into prominent notice by Wallengren's analysis in the Journal of the Linnean Society of London, Zoology, vol. xiv, which was supplemented by some remarks of my own; to which, and to remarks by Hagen, Wallengren replied in a lengthy argument in Ent. Tids., vol. v, pp. 129—138 (with a French translation). The subject, on certain points, has since been taken up by Kolbe and others; Wallengren replies, by critical notes, in Ent. Tids., xi, pp. 10—17 (1890). *I have no wish whatever to re-open the controversy; the results could lead to little practical good.* In my own work I often reiterated that I occasionally adopted old specific names commonly in use, without being satisfied as to their correctness. Pastor Wallengren's views are to be treated with great respect, because, as a Swede, he deals with insects presumably familiar to his illustrious fellow-countryman and predecessor.

Having conscientiously framed his own ideas as to the true interpretation of some of the ambiguous Linnean descriptions (some others are still left doubtful), he does not hesitate to publish his opinions.

A tabular List of the proposed changes is given below:—

McLachlan *et* Auct.		Wallengren.
Neuronia ruficrus, *Scop.*	=	N. striata, *L.*
Phryganea striata, *L.*	„	Ph. bipunctata, *Retz.**
Grammotaulius atomarius, *F.*	„	G. nigro-punctatus, *Retz.*†
Limnophilus stigma, *Curt.*	„	Lim. griseus, *L.*
Limnophilus centralis, *Curt.*	„	L. flavus, *L.*
Limnophilus griseus, *L.*	„	L. bimaculatus, *L.*
Leptocerus albo-guttatus (*Hag.*), *McL.*	„	Lep. Robertellus, *L.*‡
L. cinereus, *Curt.*	„	L. bilineatus, *L.*
L. bilineatus, *L.*	„	L. bifasciatus, *Oliv.*
Neureclipsis bimaculata, *L.*§	„	N. tigurinensis, *F.*

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* *Cf.* my remarks in "Revision and Synopsis," p. 24, in which I stated my reasons for doubting the correctness of the application of the term *striata.*

† *Cf.* my remarks, *l. c.*, p. 40.

‡ *Phalæna (Tinea) Robertella*, L., Faun. Suec., p. 360.

§ *Cf. L. griseus, suprà.*

With one exception, the whole of the changes in specific nomenclature depend upon this preconceived interpretation. In some cases I had practically come to the same opinion as he, without adopting it. In other cases, I cannot accept his conclusions. Entomologists interested in these insects will rejoice at the termination of an important faunistic List. On some of the points in Linnean nomenclature there will, I hope, be a tacit agreement to differ.

Lewisham, London:
20th June, 1890.

The apparent extinction of Aporia cratægi in England.—Yesterday and to-day I visited all the localities in this neighbourhood where, as previously stated (*cf.* pp. 217—220, vol. xxiii, of this Mag.), I found *A. cratægi* so abundant some 23 years ago. I regret to say that I did not see a single specimen; considering the wide distribution this species formerly had in this and an adjoining county, and the paucity, if not entire absence, of entomologists, the extinction of the species must be due to natural causes, and cannot be attributable to over-collecting. The local peasants appear altogether unacquainted with "fly-catchers," and asserted that my net was for "landing big fish." I saw only one specimen of *Callimorpha dominula* in a locality where it formerly was very common.—H. Goss, Tintern, Monmouthshire: *June 28th*, 1890.

Lycæna Arion on the Cottswolds.—I am pleased to be able to report that *L. Arion* is not, as I feared, extinct on the Cottswold Hills. Yesterday, in one of the localities where I caught *Arion* in 1877, I took three specimens, all males; of these one was worn, and two had apparently recently emerged from the chrysalis. On visiting a second locality, some four miles from the one last mentioned, I was disappointed at not finding a specimen. To-day I have succeeded in taking two ♂ specimens, both fresh, in a new locality, some two or three miles distant from either of the former ones. As the species seems to be widely distributed on these hills, there does not appear to be much chance at present of its extermination by collecting. In addition to *L. Arion*, the following species, amongst others, occurred more or less plentifully in or near its localities, viz.:—*Argynnis Aglaia*, ♂, *Lycæna Icarus* and *L. Agestis*, *Nemeophila plantaginis*, *Acidalia ornata*, *Asthena Blomeri*, *Timandra amataria*, *Abraxas ulmata*, and *Eupithecia lariciata.*—Id., Upton St. Leonards, Gloucestershire: *June 25th*, 1890.

Eupithecia dodoneata at Armagh.—On the evening of May 12th, I took a specimen of this moth in the Mullinures. There are no oaks in the vicinity, but quantities of hawthorn.—W. F. Johnson, Winder Terrace, Armagh: *June 9th*, 1890.

[About two years ago, Mr. N. M. Richardson found *Eupithecia dodoneata* not uncommonly frequenting a tall hawthorn hedge, which bounded a lane where no oak grew; and, curiously enough, in the very same spring, a kind friend at Lynn, who captures for me anything that comes in his way, brought in a specimen of *dodoneata*, which he had found on a hawthorn trunk, and he and I subsequently found several more. No oaks were to be seen in the neighbourhood: low marshy or arable ground and meadows, and far from woods. Last spring, specimens again occurred both at Weymouth and at Lynn, and a few have been sent on to me *this* season. All these were from hawthorn. I searched thoroughly among oaks at a few miles from Lynn last spring, and took one worn specimen, but the moth appeared to be far more rare there than among the hawthorns.

The colour of all these hawthorn specimens is a shade greyer than that of those usually taken among oak, and I have repeatedly examined them closely in the hope of finding some reliable characteristic distinction, but without success, and I think that this is also Mr. Richardson's experience. Moreover, I can find no record that any species allied to *dodoneata* but attached to hawthorn has ever been described; but on the other hand, I find that in the "Entomologist's Annual," for 1862, p. 41, the Rev. H. Harpur-Crewe mentions that the Rev. Joseph Greene had frequently taken the pupa of *dodoneata* under the bark of hawthorn.

Being resolved, if possible, to clear up the point, Mr. Richardson this year contrived to induce a female to deposit her eggs, and sent me some of the larvæ for comparison, if possible, with living larvæ from oak. This I was unable to effect, but Lord Walsingham most kindly sent up the series of duplicate drawings of larvæ of *Eupithecia*, which Mr. Buckler had long ago given to Mr. Harpur-Crewe, and which had passed into his lordship's possession, and from the drawings of *dodoneata* larvæ in this series the question was satisfactorily settled. It was known that Mr. Buckler's larvæ were from eggs obtained by Mr. McLachlan from oak-frequenting moths, and the agreement was too close to admit of any specific distinction. Moreover, having no hawthorn at hand, I gave Mr. Richardson's larvæ oak-leaves, upon which they readily fed up.

It certainly seems to me curious that this insect should have so long been supposed to be exclusively attached to oak.—Chas. G. Barrett.]

Oncocera ahenella in Roxburghshire.—I find it on the grassy banks on which *L. Artaxerxes* occurs, in June or the beginning of July. There are spots on these banks covered with beds of wild thyme, and with young firs growing here and there, and I think I noticed it mostly in those places, but it appears to be scarce, as I have not seen more than perhaps half a dozen specimens in any one season, although I have never missed seeing it every year. The moth is very shy, and extremely difficult to net. It seldom allows one nearer than three or four yards, when it rises quickly and abruptly, with a kind of gyrating flight, and in the same abrupt manner drops into the grass from ten to twenty yards in advance.—Adam Elliot, Caverton, Roxburgh, N.B.: *June 23rd*, 1890.

P.S.—I went up to the banks yesterday, and saw several *L. Artaxerxes*, and boxed a few, apparently newly emerged. I took also among the thyme a few female *Oncocera ahenella*. They have quite a different habit of flight from the males, being more sluggish, and resembling in their flight *Crambus tristellus*, rising near one and settling at a short distance, usually on a grass stalk.—*June 27th*, 1890.

A few days in the Cambridgeshire Fens.—From June 9th to 14th last, I spent at Wicken; Mr. G. C. Dennis, of York, being with me until the 12th. Unfortunately, the weather was very much against us, rain falling heavily every day following that of our arrival, so that little collecting could be done. Most of the 10th we spent at Chippenham Fen, where, as the result of close searching, a few full-fed larvæ of *Plusia orichalcea* were found. The pretty *Bankia argentula* was getting nicely out, and we each took a series. On Wicken Fen, *Papilio Machaon* was on the wing during the short intervals of sunshine; and at night a few *Nascia cilialis* occurred on the wing and at the lamp. The other species included *Lobophora sexalisata*, not uncommon, *Collix sparsata*, *Eupithecia pygmæata*, *Apamea unanimis*, *Paraponyx stratiotalis*, *Halias chlorana*, *Phoxopteryx paludana*, *Eupœcilia rupicolana*, *Glyphipteryx cladiella*, *Chauliodus Illigerellus*, &c., &c.

Few *Neuroptera* and *Trichoptera* were taken, though I worked hard for them when the weather would permit; but the absence of sun doubtless accounted for the scarcity of dragon-flies to some extent, and the herbage was too wet to satisfactorily work the *Trichoptera*. The species secured in both Orders I am sure do not at all represent what might be taken in favourable weather, and later in the season the ground must be prolific in these insects. *Pyrrhosoma tenellum** was the most interesting dragon-fly seen, and I was a little surprised to find it on Wicken Fen. *Agrion pulchellum* was very abundant; and other species were *Orthetrum cærulescens*, *Ischnura elegans*, *Agrion puella*, &c. The *Chrysopidæ* were represented by *Chrysopa flava* and *C. alba*; and the *Trichoptera* included, in greater or lesser numbers, *Phryganea grandis*, *Agrypnia Pagetana*, *Colpotaulius incisus*, *Grammotaulius atomarius*, *Glyphotælius pellucidus*, *Limnophilus rhombicus*, *L. flavicornis*, *Leptocerus senilis*, *L. aterrimus*, and *Holocentropus dubius*.—GEO. T. PORRITT, Huddersfield: *July 4th*, 1890.

Destruction of Tæniocampa populeti larvæ by starlings.—On the 6th of this month Capt. Robertson and I went to get some larvæ of *populeti* from some low trees of *Populus tremula* which were covered with that species. Capt. Robertson had picked off about 100 larvæ the night before; but this morning when we arrived at the trees, we found some starlings had also discovered the caterpillars, and had gone over the trees systematically from branch to branch, pecking a hole in one side of the spun together leaves, and drawing out the caterpillar, and so nearly had they cleared them all off, that we had much trouble to find a dozen. We caught the birds in the act, and although they had so nearly finished their feast they were very unwilling to go, and loudly objected to our disturbing them.—W. HOLLAND, 111, Southampton Street, Reading: *June 21st*, 1890.

A concise life-history of Tortrix diversana = transitana.—The eggs of this species are flat, and of a green tint; in confinement they are laid by the ♀ in large masses, agglutinated together, similar (except in colour) to those of *Tortrix sorbiana*. The eggs hatch in August, and the larva hibernates small. In the spring the larva curls up the leaves of the birch, feeding and turning to pupa within; it is full-fed at the end of May. The imago appears in July, and flies gently over the tops of the birches at dusk. It is a local and a sluggish insect, and I believe we have two species mixed together in our cabinets under the name of *transitana*.—CHAS. FENN, Eversden House, Burnt Ash Hill, Lee, S.E.: *July*, 1890.

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* This is an interesting capture, proving that P. tenellum occurs further north in England than was suspected, and that it is not confined to heathy districts.—R. McL.

Ctenopseustis obliquana, Wlk., destructive in New Zealand.—A few weeks since, I received from Mr. W. W. Smith, of East Belt, Ashburton, New Zealand, a specimen of a *Tortrix*, which had been quite recently discovered to be destructive to apricots in that country. The subject seems to have been introduced to the public by a notice in the "Akaroa Mail," to the following effect:—"Hitherto we have always believed that the apricot was the one tree in Akaroa that escaped insect pests, but we were disillusionized yesterday, when Mr. A. R. Munro brought us some fruit literally riddled by a very active caterpillar almost equal in agility to a chesse jumper, springing a considerable distance when touched. The caterpillars extracted in our presence from the fruit were of two colours, green and yellow, but may have been the same insect in different stages of growth, the green appearing ready to spin. The tree affected is four years old, and has always been healthy, making a great growth of wood every year, and this season has been covered with fruit. Not a single ripe apricot, however, has been picked from it this season without containing one or more of these pests.—*January* 28*th*, 1890."

To this Mr. Smith adds, in the "Ashburton (N. Z.) Guardian:"—"This caterpillar has appeared this year at Ashburton; unfortunately, all are full-fed. Their colour is pale green; they are exceedingly nimble in their habits, wriggling quickly off the fruit or hand at the slightest touch. I have not obtained any in the younger or 'yellow' stage. It appears to enter the fruit near the stalk, which is perhaps the most convenient place for the moth to deposit its eggs. In one instance the caterpillar had bored or eaten its way once round the stone of the fruit, and had returned to the stalk, where I found it in the act of weaving its cocoon. Besides gnawing through the pulp, it sometimes eats large patches of the skin before entering the pulp. When matured, the specimens I possess were 10 lines in length. I cannot say definitely whether all the fruit affected by these caterpillars drops prematurely or not, but I am inclined to think it does, as I have obtained nearly all by giving the branches a quick, but not heavy, tap with the hand, which caused the fruit to drop from the tree."

In writing to me, Mr. Smith says that two of the moths—one of which he sent on—emerged in 35 and 37 days respectively. It appears that the apricot was introduced into New Zealand thirty-eight years ago, and that hitherto it has flourished and fruited abundantly, without being attacked by any specially injurious insect; and Mr. Smith very naturally supposes the pest to be an introduced one, and wishes to know to what part of the world they are indebted for it. Mr. Edward Meyrick, who has done such extensive and valuable work among the *Micro-Lepidoptera* of New Zealand, identifies it, however, as one of the forms of *Ctenopseustis obliquana*, Wlk., a common and variable species in that country, but not known elsewhere. He also says that its larva is polyphagous, but especially attached to *Leptospermum*, a common myrtaceous shrub. This new development in its tastes is to be regretted.—CHAS. G. BARRETT, 39, Linden Grove, Nunhead: *June* 13*th*, 1890.

Carpocapsa pomonella in New Zealand.—*C. pomonella* has been introduced into New Zealand with imported apples.—W. W. Smith, East Belt, Ashburton, New Zealand: *March 29th*, 1890.

Mecyna polygonalis, *Tr.*, *in New Zealand.*—Being a believer in sound and generous criticism, I am at all times well pleased to have my errors corrected; I, however, doubt if Mr. E. Meyrick's comments on my notes on *M. polygonalis* in the March No. of this Magazine will settle all the questions he has raised.

(1). We are informed that "*M. polygonalis* has never yet been taken in New Zealand." With all due deference to Mr. Meyrick as a New Zealand Lepidopterist, I now admit that I wrongly assigned my notes to *M. polygonalis* instead of to *M. deprivalis*, but the error, fortunately, disillusionized New Zealand entomologists, as the moth was hitherto known to us only by the former name.

(2). In respect to *M. deprivalis*, Mr. Meyrick says "its larva, like those of the other allied species of the group, feeds solely on *Leguminosæ*, and rarely on any but *Sophora tetraptera*." There are no plants of the latter within thirty miles of Ashburton, yet the moth is common here every year. The larva in this district, although chiefly attached to the introduced *Genista capensis*, is not "solely" confined to *Leguminosæ*, as I find it occasionally on *Discaria toumaton*, a species of *Rhamna*, and at the present time on chrysanthemums in the flower borders. Ashburton is sixty miles distant from Christchurch, in a separate county, and is, therefore, not as Mr. Meyrick puts it "in the district of Christchurch." To any one desirous of knowing the history of "Caterpillar Plagues" in New Zealand, I may refer him to the introduction to Sir Walter Buller's new edition of 1888 on the Birds of New Zealand.

(3). As to my having been "misled by a very slight superficial resemblance" into confounding *M. deprivalis*, Walk., with *Heliothis armigera*, Hb., I assure my critic that, irrespective of any slight resemblance in colour, I have long been able to distinguish a *small Pyrale* from a *large Noctua*, and have for many years known the life-history of both species; but whilst animadverting on my "notes," Mr. Meyrick made no allusion to the colour, size, or structure of the larva of *any* of the two species which are *naturally* very different. My remarks on the two broods and the protective colouring of *M. deprivalis* should have convinced him (assuming that he knew it) that it was simply an error on *my* part in the nomenclature of the species, without formulating any comments. During eighteen years collecting in this country I have never been so fortunate as to observe *H. armigera* "very abundant in New Zealand," and in no instance to be destructive to cereal crops. I, however, do not doubt Mr. Fereday's statement about the larva of the species destroying pea crops; I have also known the hibernating larvæ of *Mamestra nutans* to do the same thing. In some years the former is strictly local.

(4). My remarks on the increasing flax trade in affecting the economy of *many of our finest species* of *Lepidoptera* are, according to my experience, most conclusive, although opposed to Mr. Meyrick's views. Instead of "only two or three (species) *at most*" occurring on flax lands in the flowering season, I may instance, that during *December* and January last, my friend, Mr. A. W. Webb, and myself took over forty *species* of *Nocturnal Lepidoptera* on a flax flat below this town, together with a fine series of Diurnal insects belonging to other Orders. No doubt if the flax trade increases, "flax grounds will increase also," but the working of the land alone for this or any other purpose, by modifying the native flora, acts sufficiently to diminish the numbers of some species and wholly extirpate others. The repeated cutting of the flax as soon as the blades are ready, gives no time for the plant to flower, which is of no importance to the flax miller, as the propagation and increase of the plant is obtained by division of the roots, but apart from these simple causes, which are working inevitable changes on our Lepidopterous fauna, there are others which, with our limited knowledge of the subject, are quite inexplicable at the present time, while, owing to the introduction of many valuable and many worthless plants, much of the indigenous flora has become greatly modified, and in some districts much has become extinct, and with it *some* of the species depending on it for their pabulum or other subsistance; the rule, however, in our own district is not applicable to all, as there are other species who are fitted to survive the changed order of things, and excepting that no other cause operates to keep them in check, they adopt new food and environment and become dominant species. The case of *M. deprivalis* is one strongly in point.

As a general rule it is much easier to "state positively" than it is to *prove absolutely*; on this account I maintain that no scientific critic should pronounce any article as "wholly based on error," on "incredible," because he may not "have heard of it." I do not consider any "case" or "phenomenon" occurring among New Zealand *Micro-Lepidoptera* to be in the least incredible, as so exceptionally little is known of the larvæ and habits of the group. My notes were never meant to apply to recent times, at least only so far as the habits of *M. deprivalis* are at the present time concerned, nor were they meant to imply that the larvæ of many of our finest species were confined to flax grounds, or the flax itself; I stated explicitly that the grounds were among the best for collecting Nocturnal *Lepidoptera* during the months when the *Phormium* was in bloom.—ID., Ashburton, New Zealand: *May 15th*, 1890.

Geotrupes Typhæus near Castle Douglas.—I am glad to be able to re-instate *Geotrupes Typhæus* on the Scottish list. I found a dead ♂, still quite fresh, near this, a few days ago. *G. Typhæus* seems to have been taken by the Misses Lyell in Forfarshire many years ago, as recorded in "Entomologia Edinensis," and also in Murray's Catalogue; but it was omitted in Dr. Sharp's List in the "Scottish Naturalist," and there is no Scottish record in Canon Fowler's "Coleoptera of the British Islands."—W. D. R. DOUGLAS, Orchardton, Castle Douglas, N.B.: *May 31st*, 1890.

Badister peltatus, Panz., in the Hastings district.—On June 2nd, while hunting in the Marshes near Rye, I took a single specimen of *Badister peltatus* under rejectamenta on the side of a brackish ditch. Further search at the time failed to procure any more; but I hope to have an opportunity of looking for the species again soon. On the same day I took a few specimens of *Bledius crassicollis*, two *Actobius signaticornis*, and a single specimen of *Limnichus pygmæus.*—W. H. BENNETT, 11, George Street, Hastings: *July*, 1890.

Magdalinus barbicornis in the Chatham district.—In the January number of this Magazine Mr. J. J. Walker contributed an article on the *Coleoptera* captured by him in the previous summer. To the list of beetles enumerated therein I have now great pleasure in adding for him *Magdalinus barbicornis*, a single specimen of which I have observed amongst a large consignment of unset beetles he very kindly sent me at the time from the Chatham district.—J. H. Keys, 9, Addison Road, Sherwell Estate, Plymouth: *July*, 1890.

Coleoptera in the New Forest.—A Whitsuntide holiday recently gave me a long-wished-for opportunity of visiting the New Forest in early summer. I got five days' collecting, from May 24th to May 29th, making Lyndhurst my head-quarters. The weather was very fine, but, after the first two days, which were intensely hot, an east wind tempered the power of the sun, and materially reduced the number of active insects. It was rather early for *Coleoptera*, and insects as a whole were scarce; several good species were taken by hard working, but in many cases only as single specimens or in pairs.

The first day or two were devoted to that indiscriminate thrashing of may-blossom, which is so fascinating while there are still long gaps in one's collection. Besides the usual shower of *Anaspis*, &c., there were few good species; the best insect I took was *Asclera sanguinicollis*, of which I beat one example by the road-side, half-way between Lyndhurst and Brockenhurst. Its congener was common enough. I also got one or two specimens of *Haplocnemus impressus*, and several *Elateridæ*, but the latter were common on oak, off which tree I beat *Elater pomonæ*, *Sericosomus brunneus* (commonly), *Corymbites tessellatus*, *metallicus*, and *bipustulatus*, the variety of the latter with brown immaculate elytra being the commoner. The only other species of any interest beaten were, *Clytus mysticus*, *Homalium rufipes* and *iopterum*, all fairly common, and *Silpha quadripunctata*, which was so rare, that I only saw three specimens while I was in the Forest.

On the first hot day, sweeping was fairly productive, and I took a lot of *Anisotoma calcarata*, which was not to be found on any other day, also *Amphicyllis globus*; but when the east wind set in, sweeping was a failure, and a chance specimen of *Chætocnema confusa* is all that I can place to its credit. After a day or so spent in beating whitethorn blossom, a severe penance to one who suffers, as I do, from the polite malady of "hay-fever," I turned my attention to wood- and bark-feeding species, consuming the rest of my time turning over chips where tree-felling had taken place, or scouring miles of forest in the search for really productive dead wood. This, alas, in these days of improved forestry is a hard thing to find.

The chip-turning was a comparative failure: *Barypeithes brunnipes* and *Epuræa obsoleta* being the staple insects. Two specimens each of *Pediacus dermestoides*, and *Hapalaræa pygmæa*, and one *Pterostichus oblongo-punctatus* were the best species so taken.

I was lucky enough to find a really rotten beech, which, having been blown down, had been cut up and stacked as "cord-wood;" it took me an afternoon to examine the piles of faggots, and as a result I got several *Elater pomonæ*; also *Agathidium nigripenne*, *Leiodes humeralis* and *orbiculata*, *Ditoma crenata*, *Orchesia undulata*, *Philonthus splendidulus*, and many *Homalotæ* and *Homalia*, and some

Scydmænidæ, which still await identification. Above all, I found five pupæ and three larvæ of a very large "click." These I kept, taking only one larva, which was full-grown, and changed in a day or two. They have all since emerged except one pupa, which was injured, and, as I expected, proved to be *Athous rhombeus.*

The larva has been described by Dufour and Schiödte, whose description is quoted in Fowler's "Coleoptera of the British Isles" (vol. iv, 97); this is accurate, except in two small points: the dorsal scuta of the meso- and metathorax are covered only with scattered punctures of moderate depth, while the rugose confluent punctures are confined to the abdomen, the colour is deep pitchy-black on all the harder chitinous parts. This black colour and coarse punctuation give it a very characteristic appearance. The time passed in the pupal state is from twelve to fourteen days.

Out of a similar stump I dug a lot of rotten mould, and found a small and active beetle, which looked like a *Colon*, but which was the rare *Choleva colonoides.* Of course I am sorry now I did not work harder for others, but this form of regret is not unknown to other collectors who do not recognise what they catch.

Other captures under the bark of oak and beech trees were *Synchita juglandis* (2), *Litargus bifasciatus*, and *Mycetoporus atomarius*, occasionally common, *Tiresias serra*, and *Haplocnemus nigricornis*, of which I took one dead example.

My last find before leaving was a colony of *Melasis*, in a tree south of the charcoal-burners' huts, between Lyndhurst and Boldrewood. I got about a dozen with much labour; but I shall be tempted to take a carpenter with me, if I re-visit them.

Two or three *Carabus nitens* were taken on the heaths near Lyndhurst, and since my return I have bred a number of *Scolytus intricatus*, and some half-dozen *Conopalpus testaceus* from bark and wood collected in the Forest.—W. F. H. Bla[illegible]dford, 48, Wimpole Street, London, W.: *July*, 1890.

Pionosomus varius, Wolff, at Deal.—Having recently met with *Pionosomus varius*, of which species but one previous capture in England appears to have been recorded, some of your readers may be glad to know the exact spot where I took it. This is not difficult to indicate, it being close to the Fort and Coast Guard Station, situated about 3½ miles north of Deal, and 2 miles east of Sandwich. The area to which it seemed to me to be limited was a cart track leading down to the beach, about 100 yards north of the Fort, skirting a part of the Sandhills, enclosed and used as golf links by the St. George's Club; the notice to trespassers will serve as a guide, for the dozen specimens I obtained were all taken within 100 yards of that. The cart track is overgrown with stonecrop and *Erodium*, under the shelter of which the insect was running about singly and not abundantly.—A. Piffard, Boxmoor, Hants.: *July 6th*, 1890.

Societies.

Birmingham Entomological Society: *June 16th*, 1890.—Mr. W. G. Blatch, President, in the Chair.

Mr. Herbert Stone presented a number of dried plants, to form the basis of a herbarium for the Society's use. Mr. E. C. Tye showed larvæ of Lobophora viretata.

Mr. R. C. Bradley showed a long and variable series of bred *Selenia tetralunaria*. Mr. W. G. Blatch exhibited the following *Coleoptera* from Bewdley, all being new to that locality:—*Perileptus areolatus*, *Homalota longula*, *H. subtilissima*, *Scopæus* ——sp? (same as the one taken at Ludlow, and exhibited on June 2nd), *Thinobius longipennis*, *Calodera umbrosa*, *Trogophlæus subtilis*, and *Actidium concolor*; the last two species being also new to the Midlands. Dr. P. B. Mason exhibited his Icelandic insects, and made remarks on them; he described the country, and the difficulties, which are great, of collecting there; he told all that had previously been known of Icelandic Entomology; and gave a complete list of the insects he had taken there, together with many interesting facts about them. The most striking feature of this list is the entire absence of both the butterflies and the *Orthoptera*. The list has been already published in the Ent. Mo. Mag. for July.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: *May 22nd*, 1890.—J. T. CARRINGTON, Esq., F.L.S., President, in the Chair.

Mr. S. Edwards exhibited *Lepidoptera* from China and India, including examples of *Papilio Nigarus*, also *Coleoptera* belonging to the genus *Sagra*, from Africa. Mr. Hawes, ova of *Gonepteryx rhamni*, L., and made some interesting remarks on the way the eggs were deposited. Mr. Frohawk also showed a microscopical drawing of the ova of the same species, and a coloured drawing of a small plant of Buckthorn, about three inches in size, upon which he had found seven ova. Mr. Nussey exhibited living larvæ of *Geometra papilionaria*, L. Mr. C. Fenn, a very long series of *Saturnia pavonia*, L., reared from eggs obtained from a female captured at Bournemouth; the specimens were exceptionally large, and the males very brilliantly coloured; he also showed long series of both sexes of *Spilosoma mendica*, Clerck, which he stated were reared by him from ova obtained from a female taken at Eltham, the larvæ being fed on the common broad-leaved plaintain; 43 imagines were bred, 21 ♂ and 22 ♀. The females varied little from the ordinary type, with one exception, which was curiously blotched with dark grey on the left superior wing; the males varied from the usual English type up to a dull pale yellowish-grey, and quite 50 per cent. diverged more or less from the usual form. The pupæ had been exposed to the weather in a very cold and damp spot. Mr. R. Adkin asked whether anything was known of the male parent, and whether the female differed from the type. In answer, Mr. Fenn said he knew nothing of the male, and there was nothing special about the female parent. Mr. Tutt pointed out that the variation in the male was somewhat similar to the Irish form known as var. *rustica*. Some observations were made by Messrs. South, Tutt, Carrington, Adkin, and Fenn, on pupæ of *Lepidoptera* lying over for two or more years.

June 12th, 1890.—The President in the Chair.

Messrs. B. G. Rye, of Putney, H. McArthur, of Brompton, and A. Ward, of Brighton, were elected Members.

Mr. Wellman exhibited *Acronycta strigosa*, bred from pupæ received from Cambridge, *Nemeobius Lucina*, L., bred from ova, and *Eupithecia venosata*, Fb., which had been two years in pupæ, and were received from the Isle of Man. Mr. Nussey, *Acronycta myricæ*, Gn., from Rannoch. Mr. F. Warne, *Nemeobius Lucina*, L., *Macroglossa fuciformis*, L., &c., from Horsley. Mr. Robson, a banded variety of *Zonosoma punctaria*, L. Mr. Tugwell, *Nemoria viridata*, L., and a prettily-marked male resembling the Rannoch form of *Biston hirtaria*, Clerck. Mr. R. Adkin, small and brightly marked specimens of *Herbula cespitalis*, Schiff., from the Land's End, on behalf of Mrs. Hutchinson, also larvæ of *Larentia cæsiata*, Lang., from the Grampian Hills, feeding on heather, and cases and imagines of *Psyche villosella*, Och. Mr. R. Adkin further showed nests of a wasp attached to heather, from Bournemouth, and from which the imago had just emerged; Mr. Billups said the species was *Eumenes coarctata*, one of the solitary wasps, and the only representative of the genus in Britain; he then described the habits of the insect, and exhibited various parasites belonging to the Families *Ichneumonidæ*, *Chrysididæ*, *Syrphidæ*, and *Staphylinidæ*, insects which the *Vespidæ* were particularly subject to be attacked by. Mr. Billups also showed nests of solitary wasps from Borneo, with their makers, also a very fine nest of a social wasp, *Pelopæus architectus*, St. Farg., with the imago, from Kentucky. Mr. Henderson exhibited some abnormally large specimens of *Paniscus cephalotes*, Holmgr., bred from the larvæ of *Dicranura vinula*.

June 26th, 1890.—The President in the Chair.

Mr. Hawes exhibited larvæ of *Thecla rubi*, L., feeding upon broom, upon which Mr. Hawes stated he saw the ova deposited. Mr. R. Adkin, a bred series of *Epione advenaria*, Hb., &c. Mr. Turner, the *gracilis* form of *Tæniocampa stabilis*, View. Mr. Fenn, a long series of *Sesia sphegiformis*, Hb., from Sussex, about half of them having been taken by "assembling," the remainder being bred by him. Mr. Mansbridge, a fine variety of *Cænonympha Pamphilus*, L. Mr. South, a collection of *Micro-Lepidoptera*, collected by him in Normandy, and commented on the fact that with one or two exceptions the species were the same as occurred in this country. Mr. C. Fenn, two dark specimens of *Eupithecia rectangulata*, L., also *Tortrices* taken and bred by him this year from the south of London, including a fine series of *Tortrix Branderiana*, St. Mr. Cockerell, a larva of *Tæniocampa incerta*, Hufn., found feeding on the leaves of mulberry. Mr. Billups, on behalf of Mr. South, 40 species of *Coleoptera*, one of *Ichneumonidæ*, one of *Diptera*, and one of *Homoptera*, from Normandy, nearly the whole of which were represented in this country. Mr. Billups' other exhibits were 29 species of *Diptera*, 23 of *Hymenoptera*, 5 of *Coleoptera*, 2 of *Hemiptera*, and 1 each of *Homoptera* and *Neuroptera*, in all 104 insects, representing 10 families, taken at the Society's Excursion to Mickleham on the 21st June. Mr. Mansbridge, *Leptida brevipennis*, Mils., and in reply to Mr. Billups, said he believed there were some wicker baskets stored where they were captured. Mr. Billups said that the specimens had probably been brought here in these; some years ago a number of Dutch baskets were stored in the Borough Market, and from these a quantity of the species now exhibited were bred.

July 10th, 1890.—W. H. TUGWELL, Esq., Vice-President, in the Chair.

The Rev. C. Thornwill, Rev. E. C. Dobree-Fox, and Mr. B. A. Bristowe, were elected Members.

Mr. Wellman exhibited a valuable series of 100 examples of *Eupithecia rectangulata*, L., taken at Streatham Hill, *Dianthœcia cucubali*, Fues., Liverpool, *D. carpophaga*, Bork., var. *capsophila*, Dup., from Isle of Man and South Scotland, *D. nana*, Rott., from Surrey and Ireland. Mr. Jager, also *D. carpophaga* from South Wales, and the variety *capsophila* from the Isle of Man, and *D. cæsia*, Bork., from the same locality. Mr. R. Adkin, *Coremia designata*, Huf., from Surrey, varying in width and density of coloration of central band, also *Eupithecia nanata*, Hb., from Hants and Surrey, and called attention to the extreme variability of the species. Some observations were made on the latter exhibit of Mr. Adkin, in the course of which Mr. C. G. Barrett and Mr. Tutt expressed opinions that *Curzoni* was only an extreme form of *E. satyrata*. Mr. Gerrard showed *Emydia cribrum*, L., and case of *Psyche villosella*, Och., from the New Forest. Mr. Mansbridge, *Xylophasia rurea*, Fb., var. *combusta*, Dup. Mr. Dennis, a pale specimen of *Argynnis Euphrosyne*, L., from Dorking. Mr. Croker, *Nola cucullatella*, L., from Kent. Mr. E. Joy, *Meliana flammea*, Curt., and *Nascia cilialis*, Hb., from Wicken Fen. Mr. Howard Vaughan, *Melitæa Aurinia*, Rott., *Cœnonympha Typhon*, Rott., *Nemeophila russula*, L., *Crambus sylvellus*, Hb., *Scoparia ambigualis*, Tr., and var. *atomalis*, from North Knapdale, *S. ambigualis*, var. *atomalis*, *Hypsipetes trifasciata*, Bork., and *Coremia designata*, &c., from Kilmartin Parish, Argyleshire, dark forms of *Larentia viridaria*, Fb., and two ♂ *Procris*, which differed considerably from *P. statices*, upon the identity of which the Members did not hazard an opinion. Mr. Vaughan remarked that they appeared to him to be intermediate between *statices* and *globulariæ*.

Adverting to Colonel Blathwayt's communication to the Ent. Mo. Mag. for the month of April last (p. 109), Mr. Jenner Weir exhibited the two forms of *Volucella bombylans* which mimicked *Bombus lapidarius* and *B. terrestris* respectively, stating that he fully concurred with the Colonel in considering that this remarkable dimorphic condition of the *Volucella* assisted it to become parasitic upon two species of *Bombus* differing both in colour and markings. He also exhibited a specimen of the *Volucella* which he had recently taken at Bournemouth, in which the mimicry was imperfect, inasmuch, as the arrangement of the colour resembled that of *Bombus lapidarius*, but instead of the hairs at the end of the abdomen being red, they were of a yellowish colour as in the mimic of *B. terrestris*. He showed also a specimen of the large worker of *Formica rufa*, to the antennæ of which was attached by the closed jaws the head and part of the thorax of another ant, with which no doubt it had fought and destroyed the abdomen and most of the thorax of its adversary, but could not detach the head, which on death had firmly gripped its conqueror.—H. W. BARKER, *Hon. Sec.*

ENTOMOLOGICAL SOCIETY OF LONDON: *July 2nd*, 1890.—Prof. J. O. WESTWOOD, M.A., F.L.S., Hon. Life-President, in the Chair.

Mr. J. B. Hodgkinson, of Ashton-on-Ribble, Preston, Lancashire, and Mrs. Bazett, of Springfield, Reading, were elected Fellows.

Lord Walsingham exhibited some rare *Micro-Lepidoptera* collected by himself at Cannes, including *Eudemis helichrysana*, *Conchylis rubricana*, Millière; a new *Depressaria* from *Opoponax cheironium*, which is about to be described by M. A.

Constant, and *Bucculatrix helichrysella*; and also a volume of drawings of larvæ of the genus *Eupithecia*, by Mr. Buckler, which formerly belonged to the late Rev. H. Harpur Crewe.

Mr. McLachlan exhibited larvæ and cocoons of *Mecyna deprivalis*, Walk., sent by Mr. W. W. Smith, of Ashburton, New Zealand; the species feeds commonly on *Genista capensis*, an introduced plant. Mr. McLachlan remarked on the curious nature of the larva, and suggested that as the species was so closely allied to *M. polygonalis*, so extremely rare in this country, they might be interesting to British Lepidopterists.

Mr. Jacoby exhibited abnormal specimens of a phytophagous beetle, *Metaxonycha tridentata*, Jac., in which one side of the thorax was furnished with teeth, as in the type, whereas the other side was quite simple, and presented no trace of teeth.

The Secretary, on behalf of Mr. J. Edwards, exhibited specimens of *Gyrinus colymbus*, Er., with specimens of *G. elongatus*, Aubé, for comparison; he also exhibited drawings of the ædeagus of both species, proving their distinctness.

Mr. Bower exhibited *Phoxopteryx upupana*, bred from larvæ feeding between united birch-leaves at Chiselhurst, September, 1889; and *Scardia picarella*, bred from fungus collected in Durham in May, 1870.

Mr. S. Stevens, in speaking of a tour which he had lately made in Devonshire, remarked on the extreme scarcity of insects on the coast of that county, as compared with the coasts of Kent and Sussex; there were very few larvæ, and the vegetation was very luxuriant, and very little eaten; he thought it possible that the reason of the scarcity was the heavy rainfall of South Devon, which washed off and destroyed the young larvæ. Mr. Barrett said that his experience had been the same, and that he put it down to the violence of the winds which beat the insects from the trees. Mr. Blandford remarked that he had found *Coleoptera* abundant on the Braunton Burrows, near Barnstaple, but very scarce in other localities. Mr. Mason and others took part in the discussion which followed.

Mr. Stevens further said that when at Exeter he visited the Museum, and was pleased to see the original specimen of *Plusia ni* in the late Mr. H. Dorville's collection, taken at Alphington, near Exeter, in August, 1868, and a specimen of *Callimorpha Hera*, taken also at Alphington in August, 1871, which is about six miles from the locality in which the latter insect is now said to occur; both the specimens are in fine condition.

Prof. Westwood read a paper on a species of *Aphis*, sent by Mr. E. Ernest Green, of Ceylon, affecting the bread-fruit tree, which he had named *Siphonophora artocarpi*; at the conclusion of his paper he alluded to the use of Paris-green as a destructive agent for insects. Mr. Blandford then made some remarks as to the use of London-purple (another arsenic compound) as an insecticide in the place of Paris-green; he stated that the compound was a waste product, and one-tenth the cost of Paris-green, and further that it was more soluble and more easily applied; he was also of opinion that arsenic compounds do not greatly affect sucking insects, such as Aphides, the ordinary kerosene preparations being more suitable for their destruction. Several Fellows took part in the discussion that followed.—W. W. Fowler, *Hon. Sec.*

OBSERVATIONS ON *COCCIDÆ* (No. 8).

BY ALBERT C. F. MORGAN, F.L.S.

Genus MYTILASPIS, Bouché.

1.—MYTILASPIS LINEARIS.*

Gallinsecte de coquille, Réaumur (1738), Mem. d. Ins., t. iv, pl. v, figs. 5, 6, 7. *Chermes arborum linearis*, Geoffroy, Hist. Ab. d. Ins. (1764), tom. i, p. 509; *C. abietis*, Schrank, Beit. z. Naturg. (1776), 48, 5; *C. linearis*, Modeer, Act. Goth., i, 22, 14 (1778); *C. arborum*, Schrank, Enum. Ins. Aust. (1781), 295, 585; *C. conchiformis*, Gmelin (1788), Syst. Nat., 2221, 37; *C. pincti*, Schrank (1801), Fauna Boica, 146, 1269. *Diaspis linearis*, Costa (1837), Faun. Regn. Nap. (1837), Gall. Ins., 21, 3. *Aspidiotus conchiformis*, Curtis, Gardener's Chronicle (1843), p. 375, figs. 1—6; Fitch, 1 and 2 Rept. Nox. Ins. (1856), p. 31; *A. falciformis*, Bärensprung, Journ. d'Alton et Burm. (1849); *A. pomorum*, Bouché, Ent. Zeit. (1851), p. 110; *A. pyrus-malus*, Rob. Kennicott (1854), Ac. Sci. *cf.* Cleveland. *Coccus arborum linearis*, Harris' Treat. on Ins. (1852), p. 220. *Aspidiotus juglandis*, Fitch, Ann. Rep. N. Y. St. Ag. Soc. (1856), p. 163. *Chermes conchiformis*, Boisduval, Ent. Hort. (1867), p. 315. *Mytilaspis pomicorticis*, Riley, 5th Rep. St. Ent. Missouri, p. 95; *M. abietis*, Signoret, Ess. s. Coch. (1877), p. 136; *M. conchiformis*, Sign., *id.*, p. 137, pl. vi, fig. 6; *M. juglandis*, Sign., *id.*, p. 139, pl. vi, fig. 3; *M. linearis*, Sign., *id.*, p. 140, pl. vi, fig. 5; Doug., Ent. Mo. Mag., xxiii, p. 27; *M. flava*, Sign., *id.*, p. 140; *M. pomorum*, Sign., *id.*, p. 142; Comstock, Rep. U. S. Dept. Ag. (1880), p. 325, pl. xix, fig. 2; *id.*, 2nd Rep. Corn. Un. Ex. St. (1883), p. 118; Maskell, N. Z. Trans., xi (1878), p. 192; N. Z. Scale Ins. (1887), p. 51; Doug., Ent. Mo. Mag. (1886), xxiii, p. 27; *M. vitis*, Goethe, Jahrb. nass. Ver. Naturk., 1884; Doug., Ent. Mo. Mag., xxiii, p. 28; *M. ulicis*, Doug., *id.*, xxii, p. 249, xxiii, p. 152.

This species, which perhaps may be considered typical of the genus *Mytilaspis*, and is usually called by recent authors *M. pomorum*, has been considered distinct from the *Mytilaspis* which was found on the elm by Réaumur in 1738, and which was named by Geoffroy *Coccus arborum linearis* in 1762. Signoret observes, with reference to the three species which he describes as *M. pomorum*, Bouché, *M. conchiformis*, Gmel., and *M. linearis*, Geoff., "Il est vrai qu'il y a si peu de différence que l'on pourrait presque soutenir que les trois espèces n'en font qu'une," and he afterwards mentions that the distinction between the species is based on the difference in the number of the ventral grouped glands. But I think that a variation in the number of these glands, unless accompanied by some other constant variation, can scarcely be considered sufficient for specific differentiation. I received amongst others nine specimens of *M. pomorum* from Mr. Douglas, all on one piece of *Calluna vulgaris*, and the different individuals showed a considerable difference in the size of the scale and number of grouped glands. One scale, for instance, measured ·11 in. and another ·07 in., whilst the smallest was obviously that of an adult female, as it was full of eggs. One showed grouped glands, as follows: anterior 2, anterior laterals 3 on one side 7 on the other, posterior laterals 7 on one side and 12 on the other. Another individual had 12 in the anterior group, 17 in the anterior laterals, and 14 in the posterior laterals. Mr. Maskell (*op. cit.*, p. 53) also shows that these

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* The references are arranged in chronological sequence.

glands vary in their number. It appears to me that a mistake was first made by Bouché, who, finding Réaumur's species on another plant, that is, on the apple instead of on the elm, seems to have taken it for granted that it was a new species, and named it *Aspidiotus pomorum*, and perhaps we should recall Signoret's observation with reference to this author (*op. cit.*, p. 12), "Seulement nous devons faire observer que cet auteur n'a nullement cherché à connaître ce qui avait pu être fait avant lui." Signoret mentions a difference in the form of the female, when describing *M. linearis*, Geoff., as compared with *M. conchiformis*, Gmel., but it should be remembered that the insect shrinks very much after having deposited the eggs, and often then appears different in shape to what it appeared before or during gestation. Probably, as Prof. Comstock has shown, the most, if not the only, reliable specific differences are to be found in the marginal modifications of the abdominal segments.

Signoret also describes, but from one specimen only (*op. cit.*, p. 139), *Mytilaspis juglandis*, which he considered equal to *Aspidiotus juglandis* described by Dr. Asa Fitch, but Professor Comstock has since shown by actual examination, that Fitch's *A. juglandis* is the same as *M. pomorum* (2nd Rep. Corn. Un. Ex. St., p. 124), and he mentions that the name of *M. juglandis* might be retained for Signoret's species found on the butter-nut, the anterior group of glands consisting of 2, the anterior laterals of 6, and the posterior laterals of 5. But, as I have mentioned, one of the *M. pomorum* sent me by Mr. Douglas showed 2 glands only in the anterior group, so that in the absence of any other differences, we may perhaps conclude that *M. juglandis* of Signoret is but another synonym of *M. pomorum*. Curtis has described a species (*A. conchiformis*) that is generally considered to be identical with *M. pomorum*, but his fig. 6 (*op. cit.*) which he furnishes as representing the insect I almost suspect is that of the second cast skin, and I am led to think this because he mentions that he "looked in vain for a rostrum." But he seems to have figured the real insect of the same species in his fig. 3 (*op. cit.*, p. 676), where evidently he was more fortunate in extracting the insect itself from the scale. I think his figures 2 and 3 are the same as his *A. conchiformis*, and although he mentions them in a description of another species (*A. Proteus*), he cautiously adds, "I cannot, however, be certain that figs. 2 and 3 may not be the scale and the female inhabitant of some other species." Curtis, writing to Fitch some years afterwards (Fitch, Nox. Ins., p. 34, 1856), says, "I have carefully examined your specimens. They are identical, *and are the Coccus arborum linearis*, Geoff., and I believe the *Coccus conchiformis*, Gmel., which is in that case a synonym."

There are several other species mentioned by authors which it seems to me cannot be accepted as distinct, judging from the descriptions. For instance: the *M. vitis*, Goethe, noticed by Mr. Douglas in the Ent. Mo. Mag., vol. xxiii, p. 28, but beyond the question of the number of the "spinnerets" (the grouped glands), there seems nothing to distingnish it from *M. pomorum* or *M. linearis*. The same may be said of the *M. flava*, Targ.-Tozz., described by Signoret (*op. cit.*, p. 96), which seems to have no particular characters that would enable us to distinguish it from *M. linearis.*

The *Mytilaspis saliceti*, Bouché, is mentioned by Targioni-Tozzetti in his Catalogue, 1869, p. 44, without any description, and Bouché's description (Ent. Zeit., 1851, p. 111) of it as *Aspidiotus saliceti* is insufficient to recognise it, but Signoret in his Catalogue considers *Aspidiotus saliceti* of Bouché to be the same as *Chionaspis salicis, auctorum.* Lastly, the *Mytilaspis abietis*, Schrank, is described by Signoret (*op. cit.*, p. 136), who mentions that "Targioni-Tozzetti a fait de cette espèce un *Lecanium*, mais nous pensons, à cause de la citation de Schrank même qui indique comme synonymie le *Chermes arborum linearis*, Geoff., p. 509, 17, qu'il ne faut pas le confondre avec l'*abietis rotundus*, p. 507, 7, véritable *Lecanium*." I do not see anything in Signoret's description to distinguish this from the typical species of *Mytilaspis*, and, in accordance with Schrank's own opinion, I think it may be considered a synonym of *M. linearis*. Mr. Maskell describes eight species in New Zealand, of which one is *M. pomorum*, and the remaining seven are not yet known in Europe or America. Prof. Comstock describes four species in America, of which one is *M. pomorum*, and the others will be referred to hereafter, and it may be well to recal his observations (2nd Rep., p. 116) on the genus *Mytilaspis*. He says, "I believe that the recognising of different species of the *Coccidæ* has been, in many cases, more a matter of feeling than of knowledge, and this has been the case especially in the genus *Mytilaspis*. There is no doubt that new names have been given to forms simply because they looked a little different from other forms, or because they occurred on a different plant."

I should add that Targioni-Tozzetti, in his Catalogue, 1869, mentions *Coccus salicis*, and gives it another name, calling it *Mytilaspis Maquarti*; but Signoret considered the *Coccus salicis* of authors as a synonym of *Chionaspis salicis*. Targ.-Tozzetti likewise catalogues *Mytilaspis myrti*, Bouché, without furnishing Bouché's designation, which was *Aspidiotus myrti* (Ent. Zeit., 1851, p. 112), and Signoret (*op. cit.*, p. 127) considers this as a *Chionaspis*, but admits that Bouché's description is too short to enable the insect to be recognised with certainty. The *Mytilaspis pinifoliæ*, Fitch, mentioned by Signoret (*op. cit.*, p. 442) has been described by Comstock (*op. cit.*, p. 315) as a *Chionaspis*.

Having now glanced at all the various species described by the earlier authors, if I am right in my conclusions, I suppose the synonymy of *M. pomorum* will be as given above, and I apprehend that the correct designation would be *Mytilaspis linearis*, Modeer, because, as Mr. Douglas shows (Ent. Mo. Mag., vol. xxiii, p. 28), Modeer was the first to give the species a name in accordance with scientific rules, for Réaumur only called it "Gallinsecte de coquille," and Geoffroy called it "*Chermes arborum linearis*," whilst Modeer named it *Coccus linearis*. I have not Modeer's work in my possession, but I quote from Mr. Douglas.

The characteristic features on the margin of the abdominal segments of this species are—a single marginal secreting glandular opening (called by Prof. Comstock "elongated pore") between the 1st and 2nd lobes, a double set of similar glands between the 2nd and 3rd lobes, then another similar double set, followed by a similar single gland. Between each such set of single or double marginal secreting glands is a pair of conspicuous plates, and likewise a pair between the 1st and 2nd lobes, in other words, four pairs of plates and four marginal secreting glands (two of which are double), in addition to a pair of plates usually less conspicuous between the median lobes. There is a dorsal spine at the base of each of the median lobes, another at the base of the second lobe, and one adjacent to each second, third and fourth set of marginal glands, making four spines in addition to that on each median lobe. The corresponding ventral spines appear situated between each set of plates.

2.—MYTILASPIS BUXI.

Aspidiotus buxi, Bouché, Ent. Zeit. (1851), p. 111. *Mytilaspis buxi*, Signoret, Ess. s. Coch., p. 137, pl. vi, fig. 10; *M. pandani*, Comstock, Rept. U. S. Dept. Ag. (1880), p. 324, pl. xx, fig. 12, and 2nd Rep. Corn. Un. Ex. St., p. 118.

I have found this species in company with *Uhleria camelliæ*, Comst., on leaves of the cocoa palm from Barbadoes, also on *Dictyospermum album*, and on *Areca lutescens*, all received from Mr. Douglas. I have no doubt of this species being the same as *Mytilaspis pandani*, Comstock, described and figured by him (*op. cit.*), and I cannot help thinking that it must be identical with the *Mytilaspis buxi*, Bouché, described by Signoret (*op. cit.*). Prof. Comstock, who found his species on the *Pandanus*, mentions that it is evidently closely allied to *M. buxi*. It seems evident that the species is not uncommon, from finding it on the several plants mentioned which Mr. Douglas received from different parts. I do not observe anything in Signoret's description which would not apply to the species I have examined, but his figure of the scale differs somewhat from his description. The insects, however, are often so huddled together that the individual has not facilities for fully developing its scale, which is consequently irregular in shape. Prof. Comstock describes the scale as light brown in colour, with the posterior end pale and sometimes white. In those which I have examined the scale is a little different in colour from this description, for I have found it always white or greyish-white, with the second cast skin very large and of a brown colour, making that part of the scale under which it lies appear of a light brown colour, often much resembling superficially *Fiorinia pellucida*, Targ.-Tozz., which perhaps at first suggested to Dr. Signoret the propriety of placing it in the genus *Fiorinia*, as he mentions.

♀ scale greyish-white, measuring from tip of larval skin to posterior end of scale about 1 mm. First larval skin measures about ·25 mm., and lies with extended antennæ beyond the margin of the second skin, which measures about ·55 mm. Rudimentary eyes and antennæ may be seen sometimes in this species. The margin of the abdominal segments has similar secreting glands to *M. linearis*, but the two glands forming the double set are wide apart instead of close together, as in the former species, and the plates, though in the same position, are single instead of double. The spines are the same in number and situated as usual. The median lobes are as described by Prof. Comstock, and very different to those of *M. linearis*. The ventral grouped glands of this species seem more constant than usual, for I have found them the same as described in Comstock's work, whose figs. 1 and 2, pl. xx (*op. cit.*) render it easy to identify the species. The marginal secreting glands, with the exception of the first, are much less conspicuous than in *Mytilaspis linearis*, which is a considerably larger insect than *M. buxi*.

3.—MYTILASPIS PINNÆFORMIS.

Aspidiotus pinnæformis, Bouché, Ent. Zeit. (1851), p. 111. *Mytilaspis pinnæformis*, Sign., Ess. s. Coch., p. 141, pl. vi, figs. 4 and 8; Doug., Ent. Mo. Mag., vol. xxiv, p. 21. *Aspidiotus citricola*, Packard, Guide Stud. Ins., 2nd ed. (1870), p. 527; Comstock, U. S. Ag. Rep. (1880), p. 321, pl. vii, fig. 1, pl. xviii, fig. 3, pl. xx, fig. 3.

This species was kindly sent to me by Mr. Douglas, who received it from the Royal Gardens at Kew, on leaf of orchid, *Cymbidium pendulum*, and he considers it (*l. c.*) the same as described by Bouché and Signoret. I have examined many specimens from the leaf sent to me, and I have come to the conclusion that the species is the same as that described by Prof. Comstock under the name of ***Mytilaspis citricola.*** If I am correct in this conclusion, then I presume the original specific name of Bouché should be restored. It will be remembered that Bouché, Dr. Signoret and Mr. Douglas all found the species on the same food-plant, ***Cymbidium***, and although Signoret's description does not enter into some details which would have assisted the identification, still the species does not show, I think, any characters contrary to his description; whilst, on the other hand, Prof. Comstock's figures and description leave but little room for doubt, although there is some difference as regards the groups of ventral glands. I see only about 6 to 9 in the anterior laterals and 4 or 5 in the posterior laterals, whilst Prof. Comstock mentions 18, and 9 in the respective groups. I find 5 in the anterior group, whilst Signoret mentions 4, and Comstock 6. The chief points of difference, besides the colour of the scale, between this species and ***M. linearis*** are that the median lobes of ***M. pinnæformis*** are several times notched on each lateral margin, which makes these margins practically crenate, and the apex being compressed becomes more or less acute, whilst in ***M. linearis*** (= *M. pomorum*) the median lobes have only one notch on each lateral margin. In this latter species also, as Prof. Comstock mentions, the groups of ventral glands, though subject as we have seen to much variation, are generally massed, and contain a greater number than in *M. pinnæformis*, in which the anterior group is arranged in a single row.

4.—MYTILASPIS FICUS.

Mytilaspis ficus, Sign., Ess. s. Coch., p. 138.

I received this species from Mr. Douglas, who received it from the Royal Horticultural Society's Gardens at Chiswick, where it was found on fig trees imported from the South of France fifteen years ago, and kept in pots under glass; the scales were at one time abundant, but careful treatment in brushing and washing them off has nearly extirpated them.

The ♀ scale is of a light brown colour usually, though occasionally dark grey. In its light brown colour it very much resembles *M. pinnæformis*, but it seems usually more twisted in shape. I doubt, however, whether its shape could always be depended upon, more than can its colour. The groups of ventral glands are as observed by Signoret, viz., 5 in the anterior, about 8 or 9 in the anterior laterals, and about 6 or 7 in the posterior laterals. The median lobes are very similar to those of ***M. linearis***, but the outer lateral margin is very much compressed posteriorly, so as to cause the lobe to appear bilobed. In other respects the abdominal margin is the same as that of *M. linearis* and *M. pinnæformis.* The species appears to be very closely allied to *M. Gloverii* (Packard), Comstock, but the *quasi*-penultimate segment has three plates, whereas *M. Gloverii* has only two, and besides, Comstock describes the scale of this latter species as much narrower than ***M. citricola*** (equal, as I think, to *M. pinnæformis*), whereas I find that ***M. ficus*** has a more convoluted but not narrower scale than the former species.

The ♂ scale is similar to that of the female, but smaller and rather whiter. I have found the pupa although not the perfect form. Dr. Signoret observes that the male scale is round and of a greyish-black, and he says that the other scales on the contrary (meaning the females) are very narrow and of a very light colour. But I think the males he mentions must have been those of some ***Aspidiotus*** associated with the *Mytilaspis* on the same plant.

Villa Nova da Gaya, Portugal:
April, 1890.

NOTES ON THE METAMORPHOSES OF BRITISH *LEPTOCERIDÆ* (No. 3).

BY KENNETH J. MORTON.

SECTION OF BERÆA.

In the arrangement which Mr. McLachlan adopts in the Catalogue at the end of his work on the European *Trichoptera*, this Section comes first in the Family *Leptoceridæ*. A wish to verify certain points of habit and structure made it necessary to rear the insects over again this season, and for that reason only the above sequence has been departed from in these notes.

The small black insects included in the Section used to be considered *Rhyacophilidæ*, but the discovery of the larva of *Beræodes minuta* by Frauenfeld, and some remarks on it by Brauer, suggested their transference to the *Leptoceridæ*. Some years ago the larva of *B. minuta* was found by me here in plenty, and I have since discovered the larvæ of both *B. pullata* and *B. maurus*. All these larvæ agree with those of the typical *Leptoceridæ* in possessing long posterior legs, that pair in *Beræodes* being even longer than is usual in typical forms. But it will be shown hereafter that the length is not attained in quite the same way in the two Sections. There are other differences (such for example as the presence in the larva of *Beræa* of 4-jointed maxillary palpi against 3-jointed ones in *Leptocerus*) which make the constituents of the Section as difficult to classify when viewed with regard to their preparatory states, as they are when the perfect forms are considered. Within the limits of the Section itself, the materials are by no means homogeneous so far as the early stages are concerned. The character of the antennæ in all the larvæ is decidedly Leptoceridous. While, according to our present knowledge, the balance of evidence is probably in favour of the Section remaining where it now is, the question of its alliances requires and deserves further investigation.

These larvæ are small, slender and tapering; head and anterior thoracic segments comparatively robust; head, pro- and mesothorax more or less chitinous. They possess retractile anal filaments or processes similar to those found in many *Hydropsychidæ*, but less prominent.

III.—BERÆA MAURUS, Curtis.

Larva: head rather large, when viewed from above almost circular in outline; clypeus rather broad; hairs short and not numerous. Antennæ prominent, consisting of a cylindrical process on a rounded base, apex apparently obliquely truncate, and bearing a single hair. Labrum transverse, with six bristles above and ciliated beneath. Mandibles short and stout. Maxillæ with a peculiar clavate hair beneath; palpi tapering, 4-jointed. Labium conical, apex blunt, palpi 2-jointed.

Prothorax transverse, hardly broader than head, straight in front above, but produced at either side into a blunt process, the anterior edge of which is serrate, and upon which is a number of hairs and minute points. Meso- and metathorax transverse, each broader than the segment preceding it; the first named, although uncoloured, apparently partly chitinous. All the thoracic segments sparingly hairy.

Legs: proportion of pairs (as to length) 13½—21—25½. The joints of the 1st pair much dilated; those of the 2nd pair slender, and those of the 3rd more so. The coxæ, trochanters, femora and tibiæ of all the pairs beset with rather numerous, mostly long, hairs, a few on the hind tibiæ, as well as a few on the tarsi of same legs, very long; inner side of the joints of anterior legs armed with spines, of which there are also a few on tibiæ and tarsi of 2nd pair. Femora of 2nd and 3rd pairs on their inner side with a row of short spines or points; the latter pair have also a number of spines on their outer side.

Abdomen: 1st segment broadest of all, with the usual dorsal and lateral processes, the latter being finely ciliated along their anterior margin; from the 1st segment the body very gradually tapers, the last segment being conspicuously narrower. Lateral fringe not present; it is represented on 2nd to 8th segments by a row of minute and rather widely separated hairs or spines. Last segment, above, terminates in a partially hard plate, whose curved edge carries a few hairs; beneath this are the anal limbs, consisting of a stout proximal joint produced above to a blunt point, and an inferiorly placed smaller distal joint, both joints strongly haired, the projecting tip of the first named joint bearing two or three spines of extraordinary length and strength. The claw, in addition to the usual large hook and the smaller supplementary one, has as well a kind of spur. There do not appear to be any respiratory filaments; the margin of segments four to eight inclusive in the pleural region bears on either side a short conical process, which may represent an aborted thing of the kind, but in it there is little or no trace of tracheæ.

Colours: head and prothorax bright reddish; legs and anal claws yellowish; rest of body white, sometimes with a pale yellow tint.

Nymph: slender; head transverse; labrum nearly semicircular, with a number of strong hairs; mandibles long, slender, tapering, falcate, serrate on inner edge. Middle pair of legs with fringe reduced to a few hairs.* Wing-cases acute, reaching end of 5th segment or a little beyond.

Abdomen: 3rd to 6th segments inclusive above with an anteriorly placed small oval plate at either side, each plate bearing a single backward directed hook; 5th segment, in addition, with two posteriorly placed plates, the hind margins of which bear two (probably sometimes three—the difference may be sexual) forward-directed hooks. The end of abdomen is beset with numerous fine points and is rather hairy. Appendages very short; above and on their inner face beset with hairs; seen from side they are at first descendent, then upturned; apex bifid, the acute tips slightly inturned, the superior branch being the longer. Near the origin of the appendages are two small, flat, almost circular plates, covered with minute points. There is no trace of respiratory filaments as far as I can see, nor of a lateral fringe. There also seems to be no external trace of the ventral tooth so conspicuous in the perfect insect.

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* Hardly to be called a fringe. But great care is required in determining the extent of these fringes, as the hairs are apt to become matted together and adpressed to the legs. At page 39 I *unfortunately* laid stress on the absence of fringes in the nymph of *Tinodes aureola*, which a *careful examination* of more material proves to have a distinct fringe of short hairs.

The cases run to 6 or 7 mm. in length; they are conical, much curved, and much attenuated to the posterior end, which is truncate, and filled up with a membrane pierced with a large central hole; they are smooth, composed of compactly arranged fine sand grains covering an inner silken tube. The mouth end of the nymph cases is closed with a membranous operculum, in which there is a long curved slit placed towards one side.

I have found these larvæ not uncommon at a little stream where it falls over a rock into a larger water. A favourite place of resort is under dead leaves quite out of the water, but of course everything in such a locality as that mentioned is charged with moisture.

EXPLANATION OF FIGURES (Plate I).

LARVA.

1.	Mandible, left from above	(A, o. c. 3).
2.	do. right do.	(do.).
3.	do. left from beneath	(do.).
4.	do. right do.	(do.).
5.	Maxilla and Labium from beneath	(C, o. c. 2).
6.	Labrum from above	(A, o. c. 3).
7.	Antenna	(C, o. c. 2).

NYMPH.

8.	Labrum, from above	(C, o. c. 1).
9.	Mandible from beneath	(do.).
10.	Apex of Abdomen from above	(A, o. c. 2).

IV.—Beræodes minuta, Linné.

Larva: head rather large, broadly ovate, beset with numerous moderately long hairs; clypeus long and narrow, the usual constriction in the middle very slightly marked; triangular piece indistinctly defined. Antennæ very prominent, placed on a rounded base, long, cylindrical, with a hair which arises a little before the apex. Labrum transverse, with six bristles on the disc, two small bristles in front, ciliated beneath. Mandibles small, strongly ciliated within, and at apex without. Maxillæ with 4-jointed tapering palpi (the blade in fig. 11 probably not correctly delineated). Labium a blunt cone, with minute palpi, and densely hairy above.

Prothorax very little broader than head, almost quadrate when viewed from above, not produced at sides; mesothorax hardly broader than prothorax, transverse; metathorax narrowly transverse; all the thoracic segments beset with moderately long hairs.

Legs: as to length the pairs bear to one another the proportions of about 11⅓—22½—30. The joints of 1st pair are much dilated, those of 2nd pair are long and slender, and those of 3rd pair remarkably so, the tarsal claw in the last being extraordinarily developed, and in length more than equalling the tarsus itself. The coxæ, trochanters and femora of all the pairs beset with rather long hairs, the inner (under) edge of the 1st pair being regularly ciliated; the other joints barer; the few hairs on tibiæ and tarsi of 2nd and 3rd pairs mostly of very great length. The inner side of fore-legs armed with a number of spines, of which there are also a few on tibiæ and tarsi of 2nd pair; there is also a row of minute spines on the inner side of femora of 2nd and 3rd pairs.

First abdominal segment broadest of all, the usual processes (dorsal and lateral) well developed; from it the body gradually tapers to the anal extremity, the 9th segment being rather conspicuously smaller than the others. No lateral fringe of the ordinary character; it is represented on segments three to eight inclusive by a row of minute hairs, a slight modification occurring on the anterior part of 8th segment, where, instead of hairs, there are small, closely set, bifid processes. The anal limbs are rather long; proximal joint large, the smaller distal joint bears the claw, which has two hooks, a large and a small one, the latter being bifid; both joints carry some extremely long hairs.

Branchial tracheæ occur on abdominal segments one to seven, placed anteriorly on the latero-dorsal and latero-ventral surfaces, segments one and two having them also on the lateral surfaces. In the posterior segments they take the form of single filaments or groups of two, but the dorsal filaments of the first three segments are strongly developed, and consist of a short and broad basal part carrying many (5—8) filaments, which are turned inwards over the back, so that the filaments of one side almost meet those of the other.

Colours: pale green; head above olivaceous-brown, with two pale lines, which converge posteriorly, forming a sort of U (these lines mark the outline of the clypeus), the eyes placed on large pale patches; pronotum beautifully marked with thickly set, small, round, blackish or brown dots, which become larger and less closely set in the posterior part; mesonotum greenish-fuscous, with darker points. Legs clear yellowish, anal hooks yellowish.

Nymph: very long and slender; head transverse; labrum much as in *Beræa maurus*, but more rounded and hairs different (compare figs.); mandibles longer and more slender than in *Beræa*.

Middle pair of legs with tarsi provided with dense fringes of long silky hairs; a slight fringe also on tarsi of anterior pair. Wing-cases reaching end of 5th segment, acute.

Abdomen: 3rd to 6th segments inclusive with two anteriorly placed small oval plates, each of which bears a backward-directed hook; 5th segment with two posterior transverse plates, each bearing two or three forward-directed hooks. Branchial tracheæ on segments two to six at least; they are placed on the pleuræ on the anterior part of each segment; two fascicles on either side, one towards the dorsal and the other towards the ventral surface. The appendages are long, upturned towards the tip, which slightly before the extreme apex is notched beneath, and in the notch is a short spine; the appendages are covered with fine points, and each carries on its upper surface three long hairs.

The cases of *B. minuta* are not unlike those of *B. maurus*, but are more slender; length, 7—9 mm. The tail end is hardly truncate, and consequently there is usually no distinct membrane visible. All the cases I have seen are very black, a coloration due in all probability to some mineral matter in the water whence they came. In spinning up the larvæ usually fix the cases gregariously to root fibres of water weeds, the attachment being effected by a silken band spun round the mouth end; a slightly convex membranous operculum with a slit placed towards the side closes the case.

Oviposition takes place while the ♀ rests on the surface of the water, and the act seems often to be the closing one of her life. The ova are irregularly spherical (apparently somewhat flattened), and are enclosed in a gelatinous substance which soon after contact with the water swells up into a large oval or spherical mass. I am unable to say what may be the normal course of the egg-mass; those observed by me seemed to be kept floating through coming in contact with matter on the surface, and they were usually precipitated by accident; I think, however, that under ordinary circumstances they will sink at once. (It should be remembered that examples in confinement were under notice; there may be some differences in detail under natural conditions). Resting at the bottom, the mass seems to grow more transparent, and on the tenth or eleventh day the embryonic development must be well advanced, the eyes of the larva and the outline of its body being easily made out. Three or four days later the larvæ are hatched, but they do not at once emerge from the gelatinous envelope. The first hatched larvæ lived at least two days free under cover of the envelope, but *immediately* they emerged, cases of minute sand grains were formed. A sketch of one of these larvæ before it had made a case is given on Plate I, fig. 11; the natural size of the creature is a little over ½ mm.

EXPLANATION OF FIGURES (PLATES I AND II).

	LARVA.	
PL. I.		
11.	Sketch of Young Larva; natural size, a little over ½ mm.	
PL. II.		
1.	Mandible, left, from above	(C, o. c. 1).
2.	do. do. from beneath	(do.).
3.	Maxilla and Labium, from beneath	(C, o. c. 2).
4.	Labrum from above	(A, o. c. 3).
5.	Antenna	(do.).
	NYMPH.	
6.	Labrum, from above	(C, o. c. 2).
7.	Mandible, from beneath	(do.).
8.	Apex of Abdomen, from above	(A, o. c. 3).

This concludes the notice of the more aberrant genera of *Leptoceridæ*. Of these, *Molonna* seems to me to be the one which comes nearest the typical Section, in spite of many characters peculiar to itself.

I hope soon to take up the remaining genera, which are all more or less closely allied, and included in the same Section.

Carluke, N. B.: *July*, 1890.

TABLE OF THE BRITISH SPECIES OF *ANTHOCORIS*, FALL., WITH A NOTICE OF AN ADDITIONAL SPECIES.

BY JAMES EDWARDS, F.E.S.

ANTHOCORIS, Fall.

1 (2) Elytra entirely shining.................................1. ***nemorum***, Linn.

2 (1) Elytra in part dull.

3 (6) Cuneus entirely shining.

4 (5) Clavus and basal third of corium dull, remainder of elytron shining. Antennæ entirely black .... 2. ***sarothamni***, D. & S.

5 (4) Corium entirely dull...3. ***nemoralis***, Fab.

6 (3) Inner third of cuneus dull, the remainder shining, the limits of each state well defined.

7 (8) Head and pronotum black ....4. ***confusus***, Reut.

8 (7) Head and pronotum fulvo-testaceous.......................5. ***visci***, Dougl.

The above table is intended to illustrate Mr. Saunders' recently published List of British *Hemiptera*. Nos. 1, 2 and 3 are our well-known species of those names, and Mr. Douglas has described No. 5 in detail at page 427 of vol. xxv of this Magazine; the main distinctive characters of No. 4 are set forth below.

ANTHOCORIS CONFUSUS, Reut.

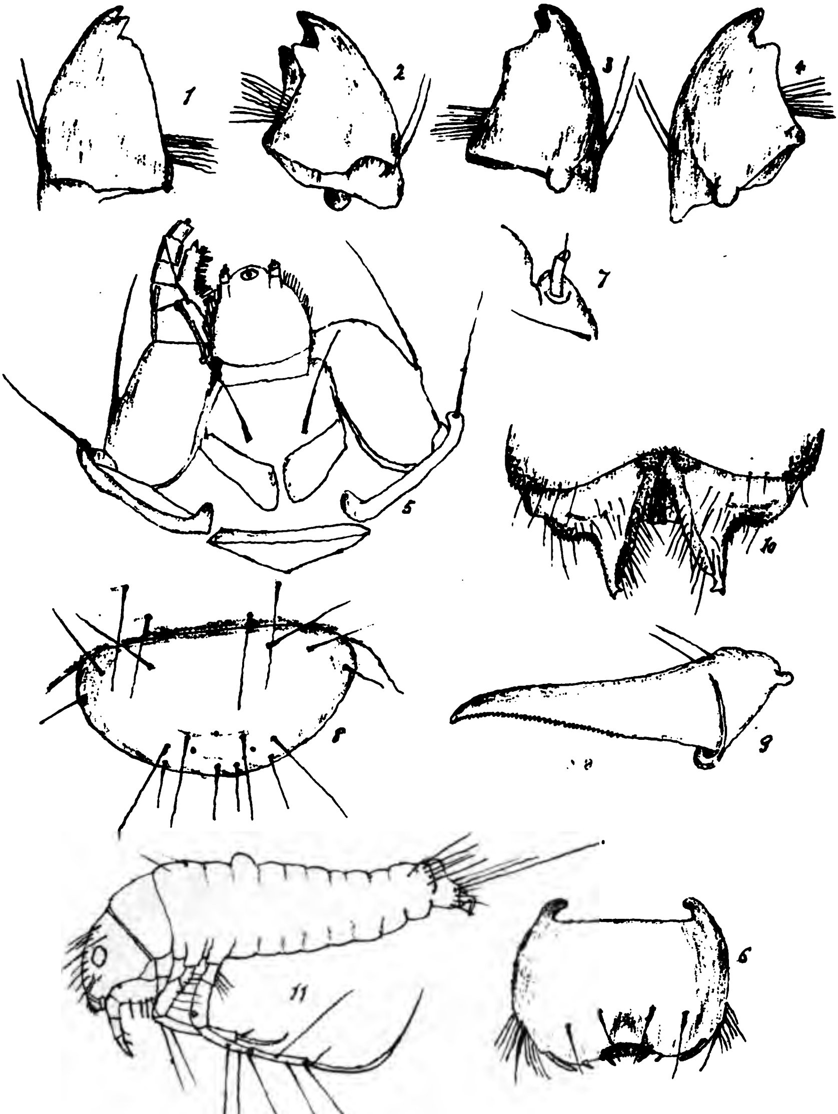
Reuter, Mon. Anth. orbis terrestris, 71.

Antennæ blackish, second joint more or less widely yellow in the middle. Head, pronotum and scutellum black. Clavus, corium and embolium yellow-brown, the two former generally more or less suffused with pitch-brown; cuneus pitch-brown; membrane fuscous, with the basal half of the nerves and three large spots (one at the base, one at the outer basal angle, and one at the inner apical angle) white. Legs yellow-brown, thighs generally darker, tarsi black at the apex.

Length, 3¾—4¾ mm.

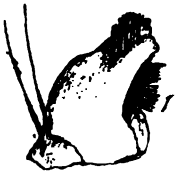
This species may be distinguished from *A. nemoralis*, Fab., apart from the structural character of the cuneus, by the more uniform brown colour of the elytra. It is probably widely distributed and common, but overlooked.

Norwich: *August 13th*, 1890.



1 – 10 Beræa maurus. 11 Beræodes minuta.

K.J.M. del. et lith.



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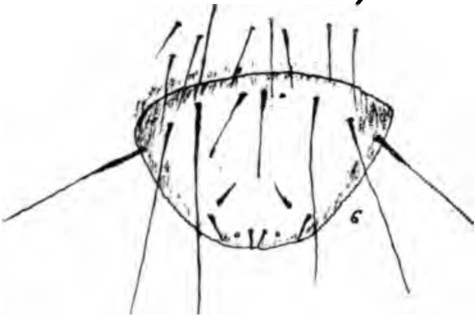

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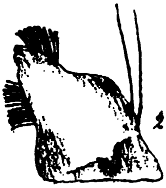

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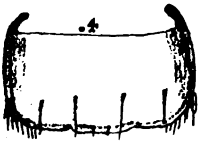

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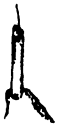

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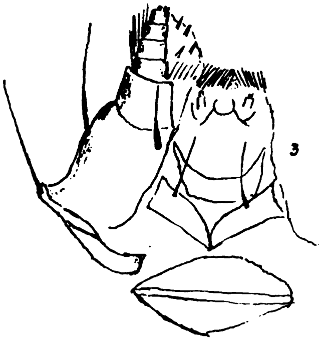

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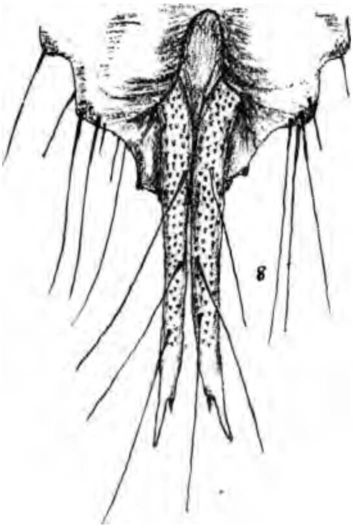

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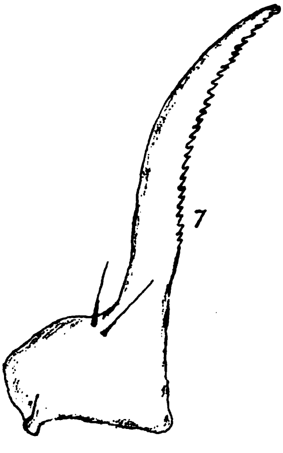

7

Beraeodes minuta.

K.J.M. del. et lith.

HOLIDAY CAPTURES IN 1886 ON THE RHINE AND IN THE PALATINATE.

BY G. T. BAKER, F.L.S.

My holiday in 1886 was spent on the Rhine, at Heidelberg and in Switzerland. We—*i. e.*, my wife and I—started on June the 8th for Cologne, from that place we went up the Rhine, staying a few days at St. Goarshausen, a beautiful little spot, about a mile from the celebrated Lorelei Rock, immortalized in German song. Never before had I heard such a flood of music as saluted me on awaking very early at this lovely place; the nightingales, by the score, I should think, were pouring forth their melody in a perfect torrent. Leaving here with many regrets, we continued our way up the Rhine to Mainz, and thence by rail to Heidelberg, where we stayed a fortnight. Unfortunately, we just came in for a short period of rain, and this, combined with the fact of having many non-entomological friends in the old Palatinate capital, helped to render our captures here very much less numerous than would otherwise have been the case. I will, however, record them all before proceeding to Switzerland, where we were more fortunate, both as regards weather and insects. Omitting the common *Pieridæ*, the *Lycænidæ* were only represented by *Thecla acaciæ* and *Lycæna Astrarche*, both species being taken at St. Goarshausen.

Vanessa c-album, Heidelberg. *Melitæa Athalia*, St. Goarshausen, abundant. *Pararge Megæra* and *Mæra*, v. *Adrasta*, both St. Goarshausen. *Epinephile Janira*, Heidelberg. *Cænonympha Arcanius*, Heidelberg, very abundant. *Syricthus alveolus* and *carthami*, St. Goarshausen. *Hesperia sylvanus*, St. Goarshausen. *Smerinthus tiliæ*, Neckargemund, a beautiful little village on the Neckar, a little above Heidelberg. *Ino statices*, St. Goarshausen. *Zygæna achilleæ*, St. Goarshausen. *Calligenia miniata*, Heidelberg. *Arctia purpurea*, Heidelberg, not uncommon. *Euchelia jacobææ*, St. Goarshausen. *Porthesia similis*, taken on the base of a lamp-post just in front of our hotel at Heidelberg. *Stauropus fagi*, in the woods behind the cemetery, Heidelberg. *Thyatira derasa*, in the woods behind the cemetery, Heidelberg. *Mamestra chrysozona*, Heidelberg, on the other side of the Neckar. *Acontia luctuosa*, St. Goarshausen. *Hypena proboscidalis*, Heidelberg. *Thalera fimbrialis*, St. Goarshausen. *Jodis lactearia* and *thymiaria*, St. Goarshausen. *Acidalia virgularia*, Heidelberg; *A. aversata*, Heidelberg; of this latter we took some remarkably fine banded varieties. *Abraxas adustata*, St. Goarshausen. *Cabera pusaria*, Heidelberg. *Metrocampa margaritaria*, Heidelberg. *Epione advenaria*, Heidelberg. *Boarmia roboraria*, Heidelberg. These three latter species were common and very fine in the woods at the back of the cemetery, which appear to be a fine collecting ground. *Halia Wauaria*, St. Goarshausen. *Ortholitha plumbaria*, St. Goarshausen. *Minoa murinata*, St. Goarshausen. *Scotosia vetulata* and *rhamnata*, St. Goarshausen; the specimens of *rhamnata* were remarkably large and richly coloured compared with our English ones. *Lygris prunata*, St. Goarshausen, and *populata*, Heidelberg. *Cidaria viridaria*, *montanata*, *candidata*, *bilineata*, all at Heidelberg. *Eupithecia coronata*, Heidelberg. *Scoparia ambiguella*, large and very variable, both from St. Goarshausen and Heidelberg; *resinea*, Heidelberg; *cratægella*, Heidelberg. *Eurrhypara urticata*, Heidelberg. *Botys octomaculata*, v. *trigutta*, *pandalis*, St. Goarshausen. *Crambus pascuellus*, *pratellus*, and *hortuellus*, everywhere; *C. mytilellus*, *culmellus*, *saxonellus*, and *perlellus*, St. Goarshausen. *Tortrix Bergmanniana*, St. Goarshausen. *Sciaphila nubilana* (*hybridana*), St. Goarshausen. *Cochylis alsella* (*tesserana*), St. Goarshausen. *Penthina cynosbana*, St. Goarshausen, and *lacunana*, Heidelberg. *Adela Degeerella*, Heidelberg. *Hyponomenta cagnagellus* (*cognatella*), St. Goarshausen. *Cerostoma persicella*, Heidelberg.

This will appear to many a very meagre list to come from so good a district; but during a fortnight at Heidelberg, we only had about three, or, at most, four fine days, the rest being both wet and cold; still, our next paper will to a certain extent make up for the poorness of this one.

16, Clarendon Road, Edgbaston,
Birmingham: *June* 30*th*, 1890.

NOTES ON SOME BRITISH AND EXOTIC *COCCIDÆ* (No. 17).

BY J. W. DOUGLAS, F.E.S.

PULVINARIA RIBESIÆ.

Pulvinaria ribesiæ, Sign., Ess. Cochen., p. 219. Goethe, Jahrb. d. nass. Verein f. Naturk., 1884, p. 120, figs. 20, 21.

♀ adult. Scale chocolate-brown, cordate, being narrowest anteriorly the front obtuse, then roundly widened so that the hinder part is broadest, the posterior margin moderately but widely emarginate; the surface flat-convex, strigose and punctate, with a smooth, subcarinate, narrow median line (these characters almost obsolete in the oldest examples). Length, 4, breadth, 3 mm.

Of the insect the antennæ (fig. 1) taper from base to apex; 1st and 2nd joints in length subequal; 3rd nearly as long as 1st and 2nd together; 4th much shorter; 5th to 8th consecutively shorter; 8th deeply gradate on one side at the apex; all, except the 1st, with few hairs. Tibiæ (fig. 2) three times longer than the tarsi, the latter with parallel sides, apex obtuse; claw small; the four ordinary capitate digitules short. The figures were kindly made by Mr. G. S. Saunders.

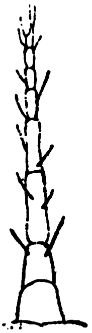
Fig. 1.

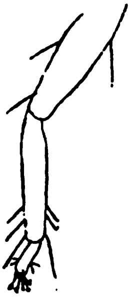
Fig. 2.

The snow-white cottony ovisac is very large, varying according to extent of oviposition, but in the most mature individuals attaining 10 mm. in length and 6 mm. in breadth. It is much wider than the scale, to the under-side of which it is adherent, is very convex, attaining a height of 5 mm. in the oldest examples at the thickest part, which is next to the scale; the surface is smooth, with slight, curved, transverse indentations, and down the middle is a deep impressed line, which in some cases amounts to a cleft. By its formation the scale is progressively tilted up till it becomes vertical, so that the insect appears to be resting on its head; the interior of the sac is filled with white eggs enveloped in cotton.

Signoret says (*l. c.*) that "it is very near to *P. vitis*, but is smaller and thicker, the scale more rounded, more cordate, and is specially distinguished from that species in the embryonic state, being then longer, its members thicker, the tarsi and tibiæ much shorter (only half the length), and the long hair observable on the tibia in almost all the species is here much longer; the antennæ are of about the same length, but have fewer long hairs, thus while the embryo of *P. vitis* has six, in *riberiæ* there are only five, of which that on the 3rd joint and that on the disc of the last joint are much the longest, and the long hair at the extremity of this joint being a good third shorter than these."

Signoret states that he had collected this species at Clamart on red currant bushes, and that in May, 1871, he had found at Chambery, on wild currant, two examples which appeared to be the same, and he could find no difference in the embryonic larvæ. Dr. Goethe found it on cultivated *Ribes* in the Rhine country. I have long expected the species would be found in Britain, but until now I had not seen it or heard of its occurrence. On June 22nd, 1889, Mr. S. L. Mosley, of Huddersfield, sent me a piece of a branch of red currant, five inches long, bearing 16 examples, which, by reason of their white ovisacs, were very conspicuous; and he says—

"I found the species very abundant, early this week, on red currant, in a garden at Wakefield, and yesterday my attention was drawn to it equally common on black currant in the next garden to my own here. It threatens to be a very nasty garden pest, and, judging from the quantity of eggs under each, one which will spread rapidly. I think they must do injury to the currant bushes. A piece of a branch I am just sending to Miss Ormerod, about 15 inches long, has over 100 of the Coccids upon it, and many of the bushes have dead or dying branches where the insects are most numerous. I thank you much for the name.

"During an excursion of our Society to Norland Moor on Saturday last, one of the Members brought me a piece of mountain ash (*Pyrus aucuparia*) which he had found infested with the same Coccid, of which I send you specimens."

Lewisham: *June*, 1889.

P. S., May, 1890.—Miss Eleanor A. Ormerod informs me that in 1889 she received specimens of this species from Macduff, near Banff, Stonehaven, Glenmuick, Aberdeenshire, Arbroath, Edinburgh, and near Berwick on Tweed; all attached to the branches of black, red or white currant bushes, and in one instance it was reputed as found on *Ribes sanguineum*. The earliest date of appearance furnished was

1880, other dates were six years or two years ago, but most of the informants stated that it was new to them. Miss Ormerod, in her "Report of Observations on Injurious Insects during 1889," gives a long account of this Coccid and its appearance in Britain, with illustrations, one of which is from a photograph of a number of the insects *in sitû* on a branch of currant, most of the ovisacs being in pluperfect condition, ruptured and spread out.

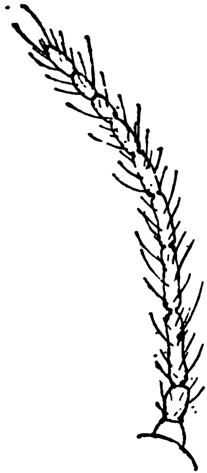

Fig. 3.

Mr. R. Newstead, Grosvenor Museum, Chester, has been fortunate in obtaining two perfect males from scales attached to black currant stems, sent to him this spring by Mr. G. Parkin, of Wakefield, and he has kindly forwarded a mounted example, description and drawings, one of which is here reproduced. The perfect insect, as not unfrequently happens with the *Coccidæ*, does not present salient distinctive specific characters, except as to the antennæ of ten finely haired joints (fig. 3); the 1st short; 2nd longer, subclavate, both stout; the rest thin, 3rd longest of all; 4th, 5th and 6th shorter, subequal; 7th a little shorter; 8th and 9th still shorter, subequal; 10th nearly as long as 7th, with two longer hairs at apex; on the last five joints the hairs appear to be only thickened at the apex, scarcely clubbed. These proportions differ from those given by Signoret for the male of *P. vitis*, in which the 4th joint is the longest; thus emphasizing the distinction of the species that he draws from the respective females and the larvæ. The male of *P. ribesiæ* was unknown to Signoret, and is now noticed for the first time.

NOTES ON *ERISTALIS TENAX* IN NEW ZEALAND.

BY W. W. SMITH.

In last year's Transactions of the N. Z. Institute (vol. xxii, 187), Mr. G. V. Hudson contributes a short paper on the introduction of *Eristalis tenax* and *Musca vomitoria* to New Zealand. Mr. Hudson observed the former species for the first time in the Wellington Botanical Gardens, in the early spring (October and November) of 1888; as the species is now widely dispersed and very plentiful in the south island, some additional observations may interest Dipterologists.

Mr. Hudson's remarks remind me of a valuable paper on "Some new facts concerning *Eristalis tenax*," by Baron Osten-Sacken (Ent. Mo. Mag., xxiii, 97), in which the distinguished Dipterologist discusses the rapid dispersion of the species over the North American continent. After discussing the causes favouring the dispersion of the species in North America, he remarks: "it will be interesting in this respect to watch whether it will ever be imported into distant islands, like New Zealand, St. Helena, &c." On November 10th, 1888, I took two specimens (♂ ♀) on the flowers of *Veronica Andersoni*. Last year I was in Australia throughout the summer, but my boy has five specimens he took in January, 1889! and saw several others, while all through the last season, from November, 1889, until a fortnight ago, the species has appeared in great numbers over the whole extent of country on the east coast of the south island.

As I have shown the fly to have appeared simultaneously in the north and south islands, or, at least, to have been observed in both about the same date for the first time, it will be well to consider the causes favouring its sudden appearance in, and rapid invasion of, New Zealand; and, at the present time, when so much stress is laid by some entomologists on climatology in producing much of the varied phenomena of insect life, it seems to me that the speedy diffusion of *E. tenax* over New Zealand is a case strongly favouring this theory; of course, all insect life mainly depends on certain climatological conditions for its existence, but exceptional conditions of climate, whether long continued, or changing, cause the diminution or increase of certain species; by the former cause I propose to account to some extent for the sudden irruption of *E. tenax* in New Zealand in 1890.

How long before the spring of 1888 the species was introduced into these islands I cannot say; it certainly could not have been many years; but the two previous seasons were most unfavourable for its increase, being for the most part very wet and windy; since then we have been favoured with exceptionally good seasons. The summer of 1889 was hot and dry, and was followed by an exceedingly dry, mild winter, while the long season now closing has been a continuance of hot, dry weather, from early spring until the present time; both the introduced and indigenous flora have bloomed profusely throughout the season, and have been visited by vast numbers of insects, indeed, it has been phenomenally an entomological year in New Zealand, and one of great swarms of *Diptera*; it has been the best season for collecting for the last decade, as insects of all Orders have appeared in great numbers.

Baron Osten-Sacken, in referring to the sudden appearance of this Dipteron in all parts of the United States (*l. c.*, p. 98), says: "The conditions which civilization brought and which favoured the rapid eastward progress of *E. tenax* consisted in the drains, sewers, and cesspools, those necessary concomitants of crowded centres, and the usual abode of the larvæ of *Eristalis.*" These facts supply an important feature of the case, but another cause must have operated to produce the sudden appearance of the species in 1884 over the vast continent of North America; whether the hypothesis I am about to offer to account for the irruption of *Eristalis* this year in New Zealand will explain the American case I cannot say; possibly the American Dipterologists will refer to their notes on the seasons preceding it, and enlighten us on the subject.

Now, it is well known that hot, dry weather is peculiarly adapted to the development and life habits of *Diptera*; the two hot, dry summers in succession, with the intervening mild winter, produced, no doubt, the natural conditions for its complete and rapid establishment in N. Z.; I am supported in my views by the unpleasantly numerous cases of typhoid, dysentery, diarrhœa, and, of course, the inevitable *La Grippe*; the presence of these diseases betokens the presence also of the natural conditions requisite for the larvæ of *E. tenax*, viz.: stagnant pools, ponds, drains, and sewers, &c., caused by the abnormally dry season, while the creeks and rivers have not been so low for twenty-seven years.

The introduction of foreign species into the fauna of any region requires careful attention, especially the causes and conditions favouring their development, as such cannot fail to be of interest and importance to future workers in the group to which they belong.

I have endeavoured to show what appears to me to have been the chief cause of the irruption of *E. tenax* in N. Z. in 1890; it, however, leaves unexplained how and when the species was introduced; but, in the absence of positive proof, I think it probable that it came to N. Z. from the Pacific coast, the numerous intervening groups of islands would provide a ready means of dispersion if the necessary conditions for its larval stage existed in the islands; nevertheless, I think that in all probability it was imported direct by the mail steamers which have plied monthly between San Francisco and Auckland for the last twenty years; from this source unquestionably came *Carpocapsa pomonella* in imported apples to New Zealand; possibly we may soon have records of the occurrence of *E. tenax* in other islands in the Pacific.

Ashburton, N. Z.:
June 12*th*, 1890.

Description of the mine of Lithocolletis anderidæ, Fletcher.—With regard to Mr. Stainton's note at p. 192, on the occurrence of *Lithocolletis anderidæ* at Bloxworth, I have taken a description of the mine, of which I found several at Bloxworth in October, 1889. These were kept in a cold room, and the perfect insects began to emerge on May 6th last. The mine is placed on the under-side of the birch leaf, between two side ribs, and varies in its length, which is about half-an-inch or a little less. The lower surface of the leaf is puckered longitudinally, which causes the mine to be visible from the upper-side by a slight elevation of the upper-surface, as well as from the eating of the green part of the leaf by the larva. Two mines sometimes occur in the same leaf. The larva lines the inside of the mine with whitish silk, but makes no cocoon.

L. anderidæ, together with other rare species which have occurred lately in this county, will be figured from coloured drawings by Mrs. Richardson on the moth plate in the Proceedings of the Dorset Natural History and Antiquarian Field Club, vol. xi.—Nelson M. Richardson, Montevideo, near Weymouth: *Aug.* 16*th*, 1890.

Further note on Pyralis pictalis, Curtis.—Mr. Warren has very kindly furnished me with some further information respecting this species, met with in the course of his investigations at South Kensington and elsewhere, from which it would appear that the late Mr. Robertson's specimen is not unique by any means—indeed, I find that my friend Dr. Mason, of Burton-on-Trent, has a specimen reputed to be of British origin.

It seems that specimens exist in the National Collection obtained from Japan, Sumatra, Ceylon, and various other localities in India, and that besides the name of *Pyralis* (or *Asopia*) *pictalis*, Curtis, Walker, &c., they exist under the synonyms of *pronœalis*, Walker, Lederer, &c., *bractiatella*, Walker, *elachia*, Butler, and *fumipennis*, Butler, which last is a smoky variety.

I gladly embrace the opportunity of correcting my involuntary mis-statement. —Chas. G. Barrett, 39, Linden Grove, Nunhead: *July*, 1890.

Note on the history of Nemeobius Lucina.—My friend, Mr. W. R. Jeffrey, sent me this year some eggs of *Nemeobius Lucina*, and I am sorry to hear that those he retained have proved abortive. I assumed that the life-history of *Lucina* was well known, and did not keep very careful notes, but I am tolerably positive that the larva moults only three times; this interested me so much that I looked up the matter. Scudder, in his North American Butterflies, states that what is recorded about it is very defective, and I then turned, as I might have been expected to have done at first, to Buckler. I think he notes four moults, but am not sure that he does not imply five. His account of the egg and young larva is rather meagre, nor does he describe the form of the full grown larva. As I have lost my opportunity, I make this note to suggest that some one should fully observe and describe these missing items, especially the newly-hatched larva, which is very curious, and the number of moults. I may, however, note that the eggs are laid in pairs, or occasionally more together, and to the naked eye look spherical, and very like those of an *Arctia*. When magnified, however, it is seen to be apple-shaped, that is, narrowed a little upwards, and with a depression at top, its widest diameter and height are the same, viz., 0·64 mm.; magnified 24 diameters it still looks smooth, and free from sculpture, unlike the fine hexagonal netting of *Arctia*; the diamond-shaped reticulations observed by Buckler are the hairs of the young larva just before hatching, and they form a very regular pattern within the egg. I took no description of the young larva, but observed that the dorsal tubercles on each side were large, and possessed two hairs, precisely as if anterior and posterior trapezoidals were fused into one plate, and the hairs (four on each segment) were remarkable as being very long, and splitting into two at about a third of their length, each branch being recurved. I have not seen in any other larva hairs dividing dichotomously in this way, those on *Ajax* (see Scudder) and *S. ocellatus* are on a much smaller scale, and are rather spines than hairs. The full-grown larva has a very *Lycænid* aspect, from the flattening of the under-surface, and the prolegs being near the middle of this flat surface; the lateral flange, however, is poorly developed, and does not project further out than the spiracles; it, however, maintains the width at the spiracular level until it rather suddenly rounds off into the flat under-surface; the head is not covered and retractile, but has more the form and setting on of a *Satyrus* than of *Lycæna*.—T. A. CHAPMAN, Fairbank, Hereford: *August*, 1890.

Scarce Coleoptera.—A few days ago I met with half-a-dozen specimens of *Smicronyx Reichei*, Gyll., on the Chesil beach, amongst *Cuscuta epithymum* and thyme. *Galeruca ælandica*, Boh., I met with here last September. *Cistela ceramboides*, Linn., I took on the wing on July 4th, 1867. *Conopalpus testaceus* I have taken strangely enough in the years 1870, 1880, and 1890, by brushing my net along the half dead branches of an oak. *Abdera bifasciata* I took here on August 5th, 1875.—C. W. DALE, Glanvilles Wootton: *August 4th*, 1890.

Capture of a second specimen of Liburnia Dalei, Scott.—On September 17th I had the pleasure of taking a ♀ of this rare Homopteron in this parish. A ♂ was taken by my father at Lulworth on August 25th, 1864, and described by Mr. Scott in Ent. Mo. Mag., vol. vii, p. 72.—ID.

Capture of Metatropis rufescens, H.-S.—I took four specimens of the above in one of my copses, in June, by sweeping *Circæa lutetiana*.—ID.

A hint concerning Raphidia.—An elaborate monograph of this singular Neuropterous genus by Mr. Herman Albarda, of Leeuwarden (Holland), has been practically completed in MS., and will, I hope, speedily be published. It will clear up many points in synonymy, add a not inconsiderable number to the list of species, and serve as a new departure in the study of a group, small in itself, but of great interest, a group (*Raphidia* and *Inocellia*) most highly specialized and isolated, save as to mimetic analogy (*Mantispidæ*). It is a group purely Palæarctic and Nearctic, and, as regards the latter zoological province, western, the solitary eastern Nearctic record probably requiring confirmation.

The larvæ are known to be carnivorous, feeding on Xylophagous larvæ, &c.

The species are not numerous, neither, as a rule, are the individuals from a collector's point of view. In this country I think I have not taken more than 15 or 20 imagos in my life, and at one time it was certainly not from lack of energy. But I have amassed a considerable quantity of materials. This brings me to my real object in writing these notes.

The largest number of individuals of European species that I ever obtained at one time came to me from a peculiar source, and in the first instance I had to thank Mr. Stainton for them. His correspondent, Herr Mühlig, of Frankfort-on-the-Maine, had a friend (whose name I never knew) in that city, a Coleopterist, who, in order to obtain Xylophagous beetles, was in the habit, in winter, of collecting wood in the forest and storing it in a glass-house: the beetles as they emerged were easily secured. But, in addition to beetles, he obtained many other things, and I remember that my first attempt to procure *Raphidiæ* from that source resulted in a consignment of *Xiphydria* (another hint!). Eventually, I obtained a large (*i. e.*, for the genus) number of *Raphidiæ*, including a probably new species. Collectors, here and elsewhere, might act on this hint. In all probability, wood-feeding *Tineina* were also obtained, and "circumstances" thus threw the *Raphidiæ* in my way. *Verbum sap.!*—R. McLachlan, Lewisham, London: *August 2nd*, 1890.

Mecyna polygonalis, Tr., in New Zealand.—As Mr. W. W. Smith has abandoned his erroneous and incredible assertion that the larva of *M. polygonalis*, restricted to *Leguminosæ* in Europe, eats corn crops in New Zealand, I think I am justified in asserting that my contention has now been not only "stated positively," but "proved absolutely." As the habits of *M. deprivalis* cannot be expected to interest English entomologists particularly, I might have rested satisfied with this, but I suppose I may add a word in support of my accessory statements, and to correct Mr. Smith's misrepresentations of them.

Ashburton, being about 40 (not 60) miles from Christchurch, is, no doubt, not in the same district in a postal or parochial sense, but entomologically speaking it undoubtedly is, the whole of the Canterbury Plains forming one very uniform district for faunal purposes.

M. polygonalis (and *M. deprivalis*) are large *Pyrales*, not small ones, and are, in fact, often quite as large as *Heliothis armigera*, which is not a large *Noctua*. I actually knew a case in Australia where I had to intervene to prevent a Lepidopterist from describing this same *M. polygonalis* as a new species of *Triphæna*, the description being already in type. Of course, my suggestion that Mr. Smith might have confused these two insects was a conjectural solution, intended to help him out of a difficulty. As he repudiates the solution, the difficulty remains. I take it to be as follows: how does he account for the larva of *M. deprivalis* having formerly consumed great quantities of tussock-grass and cereals, when, as he implies, it now does not do so? If Mr. Fereday, who is a most careful observer of long experience, and is on the spot, will rear some of these larvæ on cereals to the perfect state, I shall be convinced; meanwhile, I continue to regard it as incredible.

Mr. Smith unjustly quotes me as saying that only two or three species occur on flax lands; on reference to my words, it will be found that I said, "very few (I know only of two or three) are *confined* to these grounds," a statement which is absolutely correct.

Let me add, in reference to Mr. Smith's note on *Carpocapsa pomonella*, that I published the record of that species from New Zealand nine years ago,[*] and it has been repeatedly noticed since.—E. Meyrick, Ramsbury, Hungerford: *August 5th*, 1890.

[We hope this very petty controversy will now end. Some allusions in Mr. Smith's last note, and in Mr. Meyrick's present one, have been omitted by us as being personal, and outside the limits of courtesy. We think there have been hasty assertions and conjectures on both sides. No one is better able to give an opinion on the *Lepidoptera* of New Zealand than Mr. Meyrick; and we feel sure that Mr. Smith, or any other entomologist in the colony, has only to apply to him in order to receive the best information.

In these days of "scientific accuracy," it is difficult to avoid criticism:—

"If there's a hole in a' your coats,
I rede ye tent it:
A chield's amang you taking notes,
And, faith, he'll prent it."

Very true, Robert Burns!

Moral: (1) Try to avoid having holes in your coats. (2) If the detector of a "hole" would communicate privately, in a friendly spirit, with the owner, it would often (not always) save strong language in print.—Eds.]

Phylloxera in the Royal Horticultural Society's Gardens at Chiswick.—We regret to announce an outbreak of this pest in so important an establishment. The following extract from the Report of the Proceedings of the Scientific Committee of the Royal Horticultural Society, meeting on July 22nd last, gives a concise account of its discovery, and of the means suggested for its destruction:—

"Mr. Morris called the attention of the Scientific Committee to the appearance of this disease, and invited the Members to pronounce as to the treatment of it, as it is undoubtedly present in one (isolated) vinery in the Chiswick gardens, containing young plants from Hungary. It was first observed on a single plant at one corner, but both root- and leaf-galls have been found on another plant at the other end. Although the presence of the *Phylloxera* would suggest the opportunity for a careful series of investigations and experiments, yet it was the opinion of the Committee that it was far too serious a matter, and they were unanimous in counselling instant destruction of everything growing in the house. The following process was suggested, and will be carried out at once:—(1) Syringing the whole of the interior of the fabric, as well as the ground and vines, with water, then to burn sulphur, the presence of the water being desirable in order to absorb the sulphurous acid gas; this process is to be repeated. (2) To burn every part of every plant, as well as to calcine the soil thoroughly. (3) To remove and burn all rotten or defective wood that may be in the house. And lastly (4) to have the whole of the wood work well scraped and repainted. It is hoped that these suggestions will be useful, and followed out elsewhere, should the *Phylloxera* appear in other gardens."

It will be seen from the above Report that the pest appeared to be strictly isolated, and we hope the severe and energetic action taken by the Council will prevent its spread. In the meantime strict orders have been issued that no vine cuttings are to be distributed from Chiswick until the authorities are thoroughly satisfied that the pest has been exterminated. Some eight or ten years ago a very important vinery only a mile or two from Chiswick was found to be terribly infested; measures similar to those above mentioned were resorted to, new vines were planted, and, so far as we can learn, are now perfectly healthy and in full bearing.—Eds.

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[*] *Mr. Meyrick* gives us no reference; possibly he alludes to his citation and description of *the species in* Trans. New Zealand Institute, vol. xv, p. 61, published in 1883, which has been *overlooked by* Mr. Smith.—Eds.

Aëpophilus Bonnairii.—I have been on the look out for this insect ever since my last capture on December 4th, 1887 (*cf.* Ent. Mo. Mag., xxiv, p. 174), and have scoured the place right and left in the hope of obtaining it, but without avail until the 10th inst., when I luckily found one under circumstances similar to my former capture (*i. e.*, on the under-side of a stone at low water), and within a few feet of the spot in which that one was taken. I have not killed the little creature yet, nor do I think I shall for a day or two, until the hope of further specimens turning up disappears. I was on the habitat again yesterday, but had no success. I brought home a submarine worm, however, which I chopped up and gave to it, and had the satisfaction this morning of observing the bug in close proximity, rubbing or cleansing its proboscis with great gusto, suggesting the idea that it had just enjoyed its morning meal. I had intended to rig up a small aquarium and watch the insect's movements therein; happily, the notion occurred to me to try whether or not it could *swim* before I did so. Accordingly, I put our little friend into about a quarter of a wineglass of sea water (with which I had provided myself at the time of capture), when lo, it sprawled about in an *utterly helpless* manner; indeed, its motions were similar to those of a drowning fly. I removed it from the water, and it proved (although it had been in the glass but a few seconds), to be in a most piteous plight; its antennæ and proboscis were in close adherence, and caused the insect considerable effort to liberate them, and its pubescence was completely wetted. This result rather astonished me. I have repeated the experiment with like result. I also observed that it did not attempt to walk when carefully placed on the surface of the water; it was motionless. I gently stirred the water, but it was content to be carried around without attempting any motion on its own account; I then popped it under the water, and it would, I think, quickly have been drowned had not it been removed.—James H. Keys, 9, Addison Road, Sherwell Estate, Plymouth: *August 12th*, 1890.

Melanic variety of Zygæna filipendulæ.—On the 15th ulto., whilst collecting *Gladiolus illyricus* near Rhinefield in the New Forest, Mr. George Bryant, who accompanied me, called my attention to a *Zygæna* crawling up a stem of grass. It proved to be an interesting variety of *Zygæna filipendulæ*. The fore-wings are of the usual bluish-green colour, but the six spots are all black instead of crimson; the hind-wings are black instead of crimson, with the usual bluish-black border. It is remarkable that this variety of *Zygæna filipendulæ* was the only representative of the species, or the genus, which I saw during the whole of my stay in the Forest, which lasted from the 14th to the 28th of July.—H. Goss, Surbiton Hill, Surrey: *August*, 1890.

Obituary.

L. W. Schaufuss, Ph.D.—This very industrious Coleopterist died at Meissen, Saxony, on July 17th. He was for many years a Natural History Dealer in Dresden, and his first scientific publication appears to have occurred in a price catalogue in 1858. From that time until recently his activity was very great, and included two important Monographs on *Scydmænidæ* and *Pselaphidæ* respectively. For a few years he edited a serial under the fancy title, "Nunquam Otiosus," occupied almost entirely by his own writings.

Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: *July 21st*, 1890.—Mr. W. G. BLATCH, President, in the Chair.

Mr. W. Harrison, of Harborne, was elected a Member.

Mr. G. W. Wynn showed *Chærocampa porcellus*, taken at Sutton Coldfield last June. Mr. G. H. Kenrick showed pupæ of *Satyrus Semele*, and larvæ of *Eriogaster lanestris*. Mr. R. C. Bradley showed a short series of bred *Sesia crabroniformis*. Rev. C. F. Thornewill showed a series of *Thecla rubi* from Cannock Chase, two specimens of which possessed a light brown spot on each of the fore-wings. Mr. W. G. Blatch showed *Sesia culiciformis* from Wyre Forest. Mr. P. W. Abbott showed unusually large *Larentia cæsiata*, taken at Exmoor. Messrs. G. W. Wynn and E. C. Tye gave an account of a short holiday spent collecting *Lepidoptera* in Wyre Forest this June; among other interesting species taken being *Melanippe hastata*, *Eupisteria heparata*, *Tephrosia extersaria*, *Agrotis porphyrea*, &c.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: *July 24th*, 1890.—J. T. CARRINGTON, Esq., F.L.S., President, in the Chair.

Messrs. R. Augustine Clark, M.A., A. Hewk, and W. G. Bryant were elected Members.

Mr. Turner exhibited *Noctua festiva*, Hb., from Hampstead, and a variety of the larvæ of *Biston hirtaria*, Leach., the usual brown pigment not having developed. Mr. Joy, *Collix sparsata*, Hb., from Wicken Fen, and larvæ of the same species, which he had fed on knot-grass. Mr. Wellman, a short series of *Calymnia affinis*, L., bred from larvæ taken at Chattenden, also living larvæ of *Dianthœcia nana*, Rott., *D. cucubali*, Fues., and *D. carpophaga*, Bork., from Caterham. Mr. R. Adkin, a bred series of *Moma Orion*, Esp., from the New Forest. Mr. Moore, a dark variety of *Arctia Caia*, L., the larva from which it was bred having been taken at Rotherhithe. Mr. West, *Apamea ophiogramma*, Esp., and remarked that he had found the larvæ of this species feeding in his garden at Streatham on ribbon grass.

August 14th, 1890.—W. H. TUGWELL, Esq., Vice-President, in the Chair.

Mr. H. W. Street was elected a Member.

Mr. Wellman exhibited *Emmelesia unifasciata*, Haw., bred from larvæ obtained at West Norwood in 1888, the species having been two years in pupa. Mr. South, *Hypsipetes sordidata*, Fb., one being strongly banded with red, and having a reddish spot at the base of the primaries, bred from a larva found in Buckinghamshire; in another, the same markings were reproduced in a colour almost white, the larva from which this was bred was found in Devon, both larvæ were fed on sallow; with reference to the first example, Mr. South stated that he had had some hundreds of this species through his hands, but had never met with this particular form before. Mr. South also showed an unusually dark form of *Larentia didymata*, L., from Durham, where it had been exceedingly common. Mr. R. Adkin, *Cleora glabraria*, Hb., bred from the New Forest, and *Coccyx tædella*, Clerck, taken on the occasion of the Society's excursion to Leatherhead. Mr. Moore, two varieties of *Abraxas grossulariata*, L. Mr. Tugwell, on behalf of Mr. G. T. Porritt, larvæ of *Eupithecia extensaria*, on substituted food, *Artemisia abrotanum*. Mr. Tugwell also exhibited a box of *Arctia Caia*, L., of which he stated he had bred some hundreds this season, and only obtained one variety, the wings of which did not expand. Mr. Hawes, living larvæ of *Argynnis Selene*, Schiff., and *A. Euphrosyne*, L., which were about to hibernate. Mr. Jenner Weir, living larvæ of *Psyche villosella*, Och., and drew attention to the different kind of material from which the cases had been constructed, one singular case was formed entirely from pieces of rush, each about one quarter of an inch in length, and although he had had this specimen about two months, it appeared not to have added to its case, most of the cases had been commenced with the fragments of grass, and heath afterwards used. He also showed one larva from which he had removed the entire case, and had supplied it with strips of coloured paper, from which in a few days it had formed a new habitation, the coloured paper had also been used by another specimen, which had not been deprived of its case; during the last two months most of the specimens had doubled the length of their cases. The case was always made from the feeding or proximal end, and never from the distal end, from which latter the imago emerged. In one instance, where he had made the experiment of cutting off the distal end, the larvæ being unable to repair the breach, forsook the case and made another habitation. Mr. Bouttell exhibited a pale form of *Zygæna filipendulæ*, L., from Leigh, Essex, and *Hesperia lineola*, taken at Southend, in 1882, which he had found among his series of *H. Thaumas*. Mr. Turner, *H. lineola*, taken on the Society's excursion to Leigh, and Mr. Nussey, the same species from Shoeburyness. Mr. Tugwell expressed an opinion that the species occurred on the salt marshes, and those taken on the hills were specimens that had been blown from the marshes. Mr. South said the species was plentiful at Tancarville, some 200 or 300 yards from the river Seine, in a limestone quarry, and where there was no character of salt marshes whatever. Mr. Barker stated he had taken a specimen in Sussex on the chalk. Mr. T. R. Billups, *Coleoptera* from Tancarville, taken by Messrs. Leach and South; a specimen of *Chrysomela rutilans*, Wollaston, taken alive in the Borough Market, October last, and stated that the species was a native of the Canary Islands, and had probably been imported with potatoes from those Islands; *Glypta rubicunda*, Bridg., a species of *Ichneumonidæ* new to science, bred by Mr. Elisha from *Argyrolepia maritimana*; a spider's nest, from which he had bred *Hemiteles fulvipes*, Gr., the nest was taken by Mr. R. Adkin, at Leigh, Essex; a cluster of cocoons formed by *Apanteles spurius*, Wsm., attached to a sprig of heather, and from which the species was emerging in some numbers; also a specimen of the Wild Rose Bedeguar gall and its maker, *Rhodites rosæ*, L., with one of its parasites, *Callimome bedeguaris*, L. Mr. Cockerell, larvæ of *Eriocampa cerasi*, Pack., feeding on leaves of pear received from Banstead, where they were doing considerable damage: Hellebore was recommended as a remedy. Mr. Cockerell said the species was common in America as well as in this country. Mr. C. A. Briggs, specimens of *Cicada montana*, Scop. Mr. Perks, a specimen of *Bagous tempestivus*, Hbst., from Leigh, Essex. Mr. B. W. Adkin, a spray of oak leaves almost entirely covered with the galls of *Neuroterus fumipennis*, Hartg. Mr. Cockerell read a list of animals and plants observed in the Leigh, Essex, district, between Southend Pier and Hadleigh Castle, July 25th, 26th, 27th, 1890, showing a total of 160 species and 22 varieties.—H. W. BARKER, *Hon. Sec.*

ENTOMOLOGICAL SOCIETY OF LONDON: *August 6th*, 1890.—HENRY J. ELWES, Esq., F.L.S., Vice-President, in the Chair.

Major-General George Carden, of Surbiton, Surrey, and the Army and Navy Club, Pall Mall, S.W.; and Sir Vauncey Harpur-Crewe, Bart., of Calke Abbey, Derbyshire, were elected Fellows.

Prof. Meldola exhibited a male specimen of *Polyommatus (Chrysophanus) dorilis*, Hufn., a common European and Asiatic species, which had been taken at Lee, near Ilfracombe, in August, 1887, by Mr. Latter. At the time of its capture, Mr. Latter supposed the specimen to be a hybrid between *Polyommatus Phlæas* and one of the "Blues," and had only recently identified it as belonging to a well-known species. Mr. Stainton, Mr. Jenner Weir, and Colonel Swinhoe made some remarks on the specimen, and commented on the additions to the list of butterflies captured in the United Kingdom which had been made of late years.

Mr. W. F. H. Blandford exhibited, and made remarks on, five specimens of *Athous rhombeus*, Ol., bred from pupæ, recently collected by himself in the New Forest.

The Rev. Dr. Walker exhibited a large collection of *Coleoptera* which he had recently made in Iceland. The following genera, amongst others, were represented, viz.:—*Patrobus*, *Nebria*, *Byrrhus*, *Aphodius*, *Philonthus*, *Barynotus*, *Chrysomela*, *Agabus*, *Creophilus*, and *Carabus*. Mr. Champion, Dr. Sharp, and the Chairman made some remarks on the collection.

Mr. Elwes exhibited three species of the genus *Atossa*, Moore, three of the genus *Elcysma*, Butl., and three of the genus *Campylotes*, West., all from the Himalayas and North-Eastern Asia. The object of the exhibition was to illustrate the remarkable differences of venation in those closely-allied forms of the same family. Colonel Swinhoe, Mr. Warren, Mr. Moore, and others took part in the discussion which ensued.

Mr. P. Crowley read a paper entitled, "Descriptions of two new species of Butterflies from the West Coast of Africa," and exhibited the species, which he proposed to name respectively *Charaxes gabonica* and *Cymothoe marginata*. He also exhibited several other new species from Sierra Leone, which had been recently described in the "Annals and Mag. of Nat. Hist."—H. GOSS, Hon. Sec.

CLASSIFICATION.

BY A. F. GRIFFITH, M.A.

It has become rather the fashion of late years among men of science to depreciate the value of classification in comparison with the study of morphology and the like. But it must be remembered that careful classification lies at the root of all accurate knowledge of any branch of Zoology, so that no labour can be thrown away which is expended in obtaining correctness in this fundamental portion of science.

The visible outcome of all such labour is a catalogue, and it is the object of this paper to ascertain certain principles applicable to Natural History catalogues in general; which principles, if correctly ascertained, may with great advantage be applied to obtain a standard catalogue of *Lepidoptera*, and put an end to the annoying, and in many cases frivolous, changes with which we unfortunate collectors have so frequently to put up in the nomenclature and arrangement of our insects.

Botanists speak of the "Natural System" of classification as opposed to earlier systems or wants of system, and know the value to their science of the great advance in knowledge, which is crystallized in that expression. We Lepidopterists can scarcely be said to have known any other than a Natural System. But how is a Natural System to be reduced to meet the iron necessities of a catalogue? It will be noticed immediately on looking at a list that any species is thereby connected with two others only; namely, that immediately preceding, and that immediately following. If, therefore, it were thought necessary to indicate the relationship of one species with any other than these two, it would be necessary to use some system of cross lines, reference letters, or the like, which would infallibly break into the order of the catalogue, and render it less useful for all other practical purposes. The same remark holds good with regard to the representation of relationships of genera and other larger groups. Now, do these relationships in Nature conform to the rule which the catalogue maker, under the stress of this difficulty, would fain lay down for them? The answer is clearly, *No*. Each collector will readily bring to mind species and genera which show close relationship to more than two others. This being so, it is as absolutely impossible to represent accurately by a catalogue the whole of a Natural System as it is to represent on a plane the relative positions of points on a non-developable surface. Hence we learn that it is idle to look to natural affinities alone to fix the order of the standard catalogue. If some recognised authority were to-day to attempt to formulate such a catalogue from such materials only, it would be open to any one to-morrow to point to affinities which the first authority had perforce to overlook for the purpose of his list, to make up his mind that these neglected affinities were more important than those relied on by the first (for the closeness and remoteness of such affinities must, to a very great extent, be a matter of opinion; who is to decide whether most reliance is to be placed in any particular instance on the neuration of the wing, the shape of the costa or hind margin, the form of some sexual or other organ of the imago, or some peculiarity of the ovum, larva, or pupa? each of which may mark different relationships of the same species, genus, family, or what not); and, on the strength of this, to tell us that the order should be different.

What other criterion, then, are we to take to help us in cases where natural affinity gives our catalogue makers too much scope in airing their superior powers of annoyance? Surely, it must be the very commonplace but useful one of custom. In other words, some well known and widely used catalogue should be taken as the basis, and no alterations of order allowed in it, except in cases where it is clearly shown that a species, or group of species, has been placed between two other species or groups to which it has no close natural affinities, while another place can be found for it between two other species or groups to which it *is* closely related. Thus, when it is clearly shown that *Aventia flexula* is out of place among the *Macaridæ*, and will be among its kindred at the end of the *Noctuina*, let no considerations of ancient custom or honoured authority stand in the way of such a correction. On the other hand, if some one suddenly wakes up to the obvious fact that the *Pterophorina* have close affinities to other groups besides the *Tineina*, however astonished he may be that he had not grasped the fact before, he should not be allowed to give us all the needless and objectless trouble involved in the emission of a fresh catalogue. He can occupy himself, as others had before him, in pointing out the affinities which have struck him, thus helping to show how our clumsy methods are certain to fail in completely representing Nature's dædalean works, rather than adding another proof of how readily one maker of lists will fall into the very trap, the existence of which he has so ingeniously demonstrated.

Here it may be permitted to insert a disclaimer. Let no collector despise, and let no one think that this paper is meant to depreciate, the work of him who patiently investigates relationships. We can all see a superficial resemblance between *flexula* and the *Macariæ*, between *cæruleocephala* and some of the Bombyciform *Noctuina*. But the secrets which Dame Nature has to teach us are not delivered up to superficial observers; and the riddles, to the solution of which accurate classification helps to afford a guide, can only be solved by perseveringly following up all the clues afforded by the various parts and organs, and in their various stages of development. All that this paper has so far proved is, first, the fact that the catalogue maker cannot by any means in his power make his catalogue express all, or nearly all, the results of these enquiries; and secondly, the necessary corollary, that he must be satisfied with the more commonplace, but, nevertheless, the exceedingly useful duty of affording both collectors, and also more scientific workers, a handy means of reference to the objects of their pursuit and study.

We now come to the second branch of our enquiry. Can any change of nomenclature be of itself an advantage to a catalogue as a means of reference? If so, such changes should be made in addition to those already granted to be allowable. One regrets to have to admit that there may be such changes to be made. It is, unfortunately, a matter of common knowledge that the various catalogues now current in our own country differ *inter se*, not only as to order, but also as to *nomenclature*; and it would clearly be an advantage so to alter them as to secure *ONCE AND FOR ALL* absolute uniformity in these respects. Much more would it be an advantage so to alter both British and foreign lists as to secure the same uniformity in all. Is it too much to hope that this may yet be secured, subject only to correction in those very rare cases where an insect, or group of insects, has, through ignorance of its life-history or otherwise, been placed in an absolutely incongruous neighbourhood?

To secure uniformity of nomenclature, the so-called law of priority was invented. And with two slight modifications, this "law," or more properly canon, appears to be almost perfectly adapted to attain the desired end. What these modifications should be, can be best learnt from an examination of the difficulties to which the application of the canon has given rise in practice. Catalogue makers seem to have entirely forgotten the object of the canon, which was designed to obtain uniformity, and to have persuaded themselves that the memory of any more ancient writer is actually wronged, if a name given by a subsequent writer is preferred to his. They, therefore, set to work to unearth more and more ancient descriptions and names, and having found them, cannot rest content without publishing their success to the world. The antiquarian delights of such work should be a sufficient reward for the labour bestowed on it, and such delights are by no means small. But, unfortunately, it has become the inveterate custom for these antiquarians to call down mingled glory and anathemas on their own heads by compelling their fellow-entomologists to learn the results of their researches at the risk of being thought behind the times if they refuse. To correct this very natural tendency, it will only be necessary to fix on a limit in time (as has been done in the classification of certain branches of zoology) beyond which antiquarian zeal shall have to content itself with being its own reward. And this course is readily seen to be reasonable, as the earliest writers on entomology were usually contented with such slight, loose descriptions, that it is in very many cases easier to guess than to be certain of the species to which any description is intended to apply. Very similar considerations lead to the further rule, that no earlier name should be preferred to a well established one, unless there can be no reasonable doubt what insect was intended to be described under the earlier name, and that the description includes no more than one species. In fact, the substitution of less known names for well known ones, which is at present the great aim of catalogue makers, should be rigorously discouraged, except with the one object of uniformity.

There is still one question to be disposed of, and this is really the most thorny of all. How far is it allowable to split up so-called genera into sub-genera and species into varieties or sub-species? With regard to genera and sub-genera, there is no doubt that these are merely artificial groups, introduced for convenience, and separated from each other by distinctions of very varying value. That being so, the question of convenience is practically the only one to be considered. There are several of such gronps which are cumbersome from the number of species comprised in each. Where any natural line of sub-division, however slight, can be found in such groups, it is clearly an advantage to make use of it; and a catalogue in which, for example, the group collected by Mr. Stainton under the generic name *Gelechia* has been broken up into several distinct and sufficiently recognisable genera, is so far a better one, so that one would gladly see such a genus as *Nepticula* similarly dealt with, if only it were possible. When, however, we discuss the value of specific distinctions, we are met by a further difficulty in the existence of two separate theories on the subject; one school contending that species are divided by an impassable natural separation, the other that they are scarcely more than artificial groupings, distinct enough indeed in most cases, but not in all. The best opinion appears to be, that while specific distinctions are (for all practical purposes of a catalogue) generally absolute, there are certain groups in all Orders of Zoology where absolute specific distinctions do not exist, as, for instance, the willows or brambles of the botanist, the willow warblers and their allies, or the titlarks among birds, the ammonites or terebratulas among fossil mollusca, and the pectens among recent ones, not to mention the groups in our own collections which, as we entomologists shall have no difficulty in recollecting, present similar difficulties among the *Agrotes*, the *Sciaphilæ*, the *Coleophora*, and other genera. Now, it is especially by the study of these groups that we hope to increase our knowledge of the methods of Creation, and a satisfactory system of classification of them will be of great service in this study. If it be true, then, that even specific distinctions are in certain cases not absolute, but only relative, we must again fall back on custom to help us out in the difficulty, taking certain well known named standard forms as distinct species for purposes of classification. And it is easy, without introducing any fresh want of uniformity, to indicate, if it be thought advisable, the more artificial nature of such distinctions by some peculiarity in the type used for those particular names in the catalogue.

Finally, the naming of varieties has lately been proceeding at a rate so prodigious, as apparently to have excited in the bosom of rival classifiers a spirit of violent opposition. No doubt, this pursuit, which is lamentably easy, can be carried to an excess. But the study of variation and aberration (to use terms which are intended to express two different lines of effect of the same force) is one of such extreme interest and value to the student of Nature, that the utmost pains should be taken to obtain a proper classification and naming of varieties and aberrant forms. Perhaps it may be allowed to treat somewhat further of this subject in a subsequent paper, as it does not seem to affect the matter now in hand.

To sum up the results of this paper—

1. A catalogue cannot be made to represent fully the Natural Order. Its one object should, therefore, be to provide a handy means of reference, for which purpose the utmost obtainable degree of finality, both of Order and Nomenclature, is essential.

2. Such finality of Order is to be obtained by selecting once for all a well known catalogue, and allowing no deviations from the order in this catalogue, except where it is proved that a species or group is placed in an *absolutely* incongruous neighbourhood, and that there is a suitable place for it elsewhere.

3. Such finality of Nomenclature is not to be found by the application of the canon of priority alone, but by supplementing, or rather curtailing, that canon by placing a limit beyond which it shall not operate, and by refusing to recognise any change in favour of a less known name, when there is any doubt as to the earlier description being applicable, or, if applicable, being too inclusive.

4. In cases where specific distinctions are doubtful, keep accepted standards, the doubtfulness of which may, however, be indicated by some accepted peculiarity of print.

The writer has two objects in publishing this paper. First, to invite comments, and thus endeavour to ascertain whether any further canons may be needed to procure the great desideratum of a standard catalogue. And next, to induce the powers that be in Britain to take counsel with the powers that be elsewhere, and to apply the canons at the very earliest opportunity.

15, Buckingham Place, Brighton:
June 3rd, 1890.

Occurrence of Plusia moneta, Fab., in Great Britain.—It is a rather curious fact, but one well established, that those seasons which are remarkable for unfavourable weather and consequent scarcity of insects, are also noticeable for the occurrence of unexpected novelties or rarities. Possibly the wretched weather (which is not usually confined to these islands) induces restlessness on the part of insects, and a desire to "better their position" by migration, and so an influx of strangers comes about.

This season the interesting visitor appears to be *Plusia moneta*, Fab., of which a specimen has already been recorded this year in another magazine. The first specimen noticed was taken hovering over a *Delphinium* blossom in a garden at Dover, by a schoolboy, on the evening of June 25th. It was brought to Mr. Sydney Webb, in whose collection it now is. Another was taken by Mr. W. Holland flying about a gas-lamp at a railway station near Reading, on the night of July 2nd, and is now before me. It is a beautiful specimen, but paler than Mr. Webb's and not quite so large, the latter being of the largest size usually attained by the species. This is a most lovely species, as large as *P. orichalcea*, almost the whole of the fore-wings being of a pale yellowish-brown or yellowish-grey, suffused with pale golden, with a narrow, darker golden-brown, central band or irregular fascia. The greater part of the hinder margin is broadly tinged with violet. The orbicular stigma is nearly round, bright golden, and beneath it is a similar spot of the same colour, the two forming a sort of 8 mark, or two tiny yellow *coins*—hence the name. The hind-wings are pale grey with darker nervures; the palpi are long and somewhat recurved.

Plusia moneta is widely distributed in Europe, and is said by Kirby chiefly to frequent mountainous districts. It occurs in the east and south of France, and much interest would attach to any information attainable as to whether it has this year been noticed in the northern or western portions of that country. It is a most welcome addition to our fauna, and as its food-plant, the monkshood (*Aconitum*), grows in every cottage garden, there seems no especial reason why it should not become a permanent resident.—Chas. G. Barrett, 39, Linden Grove, Nunhead, S.E.: *September 15th*, 1890.

Eulepia cribrum.—What is the food of this species? It is generally supposed to be heath, but is this the case? Towards the end of last June, Mr. V. Gerrard kindly sent me some eggs from the New Forest; I gave the young larvæ heath, *Calluna vulgaris* and *Erica cinerea*, but they were very restless, I could not see that they touched it, and some died. I then put in also some grasses, *Poa annua* and *Aira flexuosa*, when they seemed to settle and one or two passed their first moult. My observations were brought to an end by the pot in which they were, being upset from the low shelf on which it stood. On looking at Mr. Buckler's figures, vol. iii, pl. xlvi, I observed that the larvæ are represented on a fine leaved wiry grass. I see that *Festuca duriuscula* is given as the food of *E. grammica*, so very probably that species or *F. ovina* would be eaten by *E. cribrum*. I shall be glad of any information on this point.—E. N. Bloomfield, Guestling Rectory: *Aug. 19th*, 1890.

[Freyer, vol. ii, p. 56, thus writes of *Bombyx cribrum:* "We are indebted to Herr Konewka (after whom the variety of *Arctia villica* was named Konewkai), of

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Berlin, for the natural history of this *Bombyx*. He sent me an inflated larva skin, together with a pupa, and the following notice :—

"On the 26th July, 1833, a pinned female of this species laid a number of eggs, globular, smooth and gold-shining, which, after four days, assumed a darker tinge, then daily became browner, and on the 16th day produced blackish larvæ. I fed them with lettuce leaves (*Lactuca sativa*), which they appeared to eat readily. After several moults, when half-grown, they hibernated in moss; in March they resumed their old diet, and after passing their last moult they spun slight cocoons in which they changed to the pupa state during the month of June, and after four weeks the imago appeared.

"Out of doors I have only found the larva singly, and certainly exclusively on heather, *Erica vulgaris*, where, like all this tribe of larvæ, it seems to try to escape observation by rolling itself up and tumbling down amongst the roots of its food."

It has occurred to me that the larva may truly feed on the thin wiry grasses, suggested by Mr. Bloomfield, as these often grow amongst the heather, but for a larva of this size they afford very little foot-hold, and it may therefore prefer the more secure support afforded by the *Calluna*.—H. T. S.]

Apatura Iris, L.—On August 5th, Edward Woodthorpe, a young collector, brought me a male taken by him on July 25th, 1890, at Welton Wood, near Alford. He saw three more individuals also.—JAS. EARDLEY MASON, The Sycamores, Alford, Lincolnshire: *August*, 1890.

Note on the food of Drymonia dodonæa.—A larva of this species, beaten from a *beech* tree ten days ago, continued to eat leaves of the same, and though oak and birch were put in with it, they were left untouched. It yesterday spun its cocoon, with grains of sand attached, on the surface of the soil, beneath some moss. Mr. C. Viggers informs me he has beaten it from *beech* in this neighbourhood on former occasions, and found it to feed upon the same. I record this as oak and birch are the only trees usually given as food for *D. dodonæa*; indeed, Mr. Hellins says, in his notes to Mr. Buckler's figure in the Ray Society's volume (ii, p. 158), "the food is always oak."—W. R. JEFFREY, Ashford: *September 11th*, 1890.

Re-occurrence of Epischnia Bankesiella at Portland.—I was very much pleased at the occurrence in 1889 of two specimens of *E. Bankesiella*, as it showed that it was a permanent resident in Portland, and that the male and female taken in 1887, from which I described it, were not merely chance visitors.

One of the 1889 specimens was again taken by Mrs. Richardson, and one by myself, and Mrs. Richardson has also taken a specimen this year, so that I now have five, of which four are females, and one (worn) a male. I do not think that any one else has taken it here, and I have not yet heard of its being found in any other part of the world. All these specimens occurred in the same locality, within half a mile of each other. The species seems to be either very rare, or to move about very little, as I have worked for it a great deal with very small results. I have no clue whatever to the food-plant, as I cannot associate the moths taken with any one plant more than another.

The remarks in Merrin's calendar as to the "villainously wet and windy weather" of Portland have been, perhaps, specially true this year, as good collecting days and nights have been rare; either it rained, or there was a sea mist, or a strong wind, any one of which is quite sufficient to spoil the collecting. In addition to this, the very rough and rocky character of the locality makes any collecting, especially at night, hard work, and often dangerous, unless one knows the ground well and is very careful. One sometimes finds oneself on steep grassy slopes with precipices at the foot, invisible from above, or has to climb over piles of huge blocks of stone, each weighing many tons, between which one's foot or body might easily slip and be caught, or one may suddenly come upon the edge of one of the deep quarries and cuttings for tramways, which are scattered all over the island, round which there is never any sort of fencing. There are also holes, the depth of which I have not ascertained, a few feet wide, down which one might easily fall if one did not know of their existence, as their mouths become partly covered with plants, which make them inconspicuous. Altogether, I think that any captures at Portland are well earned, especially in a season like that of the present year. Something was said (Ent. Record, i, 16) about the dangers of taking *Agrotis lunigera* in the Isle of Wight, but a friend of mine who has taken it in both places tells me that he much prefers that locality to Portland, and that the difficulties and dangers of the two are not to be compared.

A coloured figure of *E. Bankesiella* is given in Proceedings of the Dorset N. H. Soc. and Antiq. Field Club, vol. x. The species appears to be very constant in colouring, but the latter specimens are, if anything, more obscurely marked than the ♀ first taken (the ♂ was too worn to describe). There is sometimes a more or less distinct whitish spot near the inner margin, and about two-fifths of the way from the base to the anal angle. In all other respects the description given (Ent. Mo. Mag., xxv, 63) is quite satisfactory.—NELSON M. RICHARDSON, Montevideo, near Weymouth: *September* 15*th*, 1890.

Occurrence in Dorset of S. subsequana, Haw., and M. rufimitrana, H.-S.—In May, 1889, I took a very few specimens of *Steganoptycha subsequana*, Haw. (see Ent. Mo. Mag., xxiv, 6), in a wood some miles from Weymouth, composed of various fir and other trees, including *Pinus austriaca*, spruce, silver fir, larch, oak, &c., &c. I did not at the time recognise the species, which was afterwards kindly named for me by Mr. H. T. Stainton, and I was unable to go for it again until the present year. Although I only took so few specimens in 1889, I had hoped, from what I then saw of it, to be able to obtain it more plentifully by working specially for it, but though I spent several days last May in pursuit of it, I invariably found it very scarce and hard to get. In the wood in which I first discovered it I took hardly any this year, but found it in a neighbouring wood of similar character. Here, however, it was very local, being almost confined to a small portion of the wood, though an occasional straggler occurred elsewhere. I took one specimen flying naturally at dusk; all the others were beaten out of some kind of fir. I think that these moths were really scarce, and not only apparently so, as even when they seemed to fly readily, on a branch being touched I found them rare, and sometimes worked for hours without seeing one. They are most capricious in their ways, and unless *the weather is exactly* what they like, they absolutely refuse to move. They also seem to get worn very quickly, so that it is most difficult to secure really fine specimens, and, judging from the semi-transparent state of the very few I have seen in my friends' cabinets, I suppose that others have suffered even more than I in this respect.

I have also to record the occurrence in July, in the same locality, of *Mixodia rufimitrana*, H.-S., amongst silver fir, on the terminal shoots of which its larvæ had apparently been feeding. These little moths flew at dusk round the tops of the trees, so that I wished that I had a long-handled net, as there was much difficulty in inducing them to descend.

I may remark that these woods are strictly preserved by the owner, who has very kindly allowed me to collect in them occasionally.

A coloured figure of *S. subsequana*, from a drawing by Mrs. Richardson, will be given on the moth plate in Proc. Dorset Nat. Hist. and Antiq. Field Club, vol. xi.—Id.

NOTES FROM THE RED SEA.

BY J. J. WALKER, R.N., F.L.S.

On March 14th we were in the Suez Canal: on the morning of the 15th I landed at "Port Tewfik" (2½ miles from Suez) at 6.15 a.m., and walked up to that very dirty guide- and donkey-infested town. Not finding much to interest me here, I made for the hills of Jebel Atákah, to the west of the town, which looked quite near, but it cost me nearly three hours of hard walking over a plain absolutely destitute of life, animal and vegetable, it being nothing more than an old sea beach upraised, strewn with shells and broken fragments of coral, the whole saturated with salt. As I got near the base of the hills I began to meet with a scanty but very interesting flora, composed chiefly of thorny plants, even the *Cruciferæ* being armed with spines. Here I was very much pleased to make the acquaintance of the genus *Adesmia*, which seems quite to replace *Pimelia* in these parts; I met with four species at least, two or three being common; they are very queer ungainly spidery-looking fellows, but they run with great speed, and have a provoking habit of getting under a thorny bush, whence it is not easy to get them out. Besides these, however, I could get but very little, though I took a good sized *Buprestid* (? a *Pœliconota*), a fine yellow-spotted black locust, not rare, and a pair of a very pretty *Melitæa*, allied to *M. didyma*, but I think quite distinct. I got back to Port Tewfik (which is connected with Suez by a long causeway) at 3 p.m., very tired, having walked at least 24 miles. Close to Suez I got heaps of *Ocnera*, and a few small heteromerous forms strange to me.

We proceeded on our course down the Red Sea the same evening, and had a fine steady run until the 20th, when we stopped off the little islet of "Hind Kadam" to land an observing party, and as the Captain wished me to accompany them and see what could be found in the Natural History line, I was by no means loth to land and spend the day there. Hind Kadam, which is about 35 miles from the nearest point of the African coast, close to Suákin, is a little coral islet only 600 yards long by 180 wide, no part being elevated more than 15 feet above the sea. From a little distance it looks rather verdant, being covered with an open thicket of bushes some 6 feet high, all of one species, a shrubby *Suæda*, just like ours in foliage, but making a hard woody stem as thick as one's leg. Besides this plant I saw only four other species on the islet, all rare, except a coarse rushy grass. Every part swarmed with hermit-crabs, which had appropriated all the empty shells.

I had a good look for insects, but could find only three species of *Coleoptera* living, viz., a *Gonocephalum*, a *Phaleria*, and a minute *Malacoderm*, in size and appearance curiously like a black *Scydmænus*; this last was found running actively among the shells and coral *débris* at high water mark. Besides these I met with remains of one or two other beetles (*Calosoma*, *Himatismus*, *Crypticus*, &c.), but could find none of these alive. A few little Geometers, &c., were taken flitting very actively among the *Suæda*. On the island were two osprey's nests, huge structures of sticks, four feet high and as many in diameter, one of which contained three fine eggs, which I took. The island is occasionally resorted to by fishermen from Suakin, and we found two men, an Arab and a negro, who had come here to catch turtle, and had evidently had good success, to judge from the abundant remains of recently killed ones scattered about. Altogether I had a very enjoyable day on Hind Kadam, though I got severely burned by the sun while bathing and wading about on the beach looking for shells.

On the 22nd we anchored for a couple of days among the Zebayir Islands, and the following day (23rd) I had a ramble on Saba, the second in size of them. The Zebayir Islands are all of small dimensions, entirely volcanic in structure and utterly barren, nothing but dreary slopes of black, rough, cellular lava; only on Saba is there a salt lagoon of considerable extent, fringed with a scanty growth of a shrubby species of *Salicornia* about four feet high. This lagoon is a great resort of flamingoes, of which several were shot by our people; unfortunately they could not be made good specimens of. I saw very few insects in my walk, but met with two species of butterflies, Pyra-

meis cardui (of course), and a little "Blue," allied to the European *L. Lysimon*, which latter was not rare; no beetles, though one of the officers brought me a few carrion things (*Dermestes*, *Saprinus*, and *Phaleria*) which he had found under a dead bird on the main island, Jebel Zebayir. We spent two or three days in sounding in the neighbourhood of these islands, and resumed our course on the 26th, arriving at Perim (in the Straits of Bab-el-Mandeb) on the morning of the 27th.

This island was our head quarters until April 3rd, and during that time I had a good many opportunities of landing, and managed to enjoy myself very much, although the heat was intense (85° in the shade every day, and never less than 80° at night), and the island is as barren and dreary a place as can well be imagined. It is of limited size (about four miles by three), and of a somewhat horseshoe shape, and generally level in character, the highest point being 214 feet above the sea. The greater part of the island is strewn with great blocks of black lava, very rough and unpleasant to walk over, but on the north side is a tolerably extensive sandy plain (in fact, an old raised coral reef), covered with a scanty sprinkling of low green bushes of a species of *Zizyphus*, and plants allied to *Salsola*, *Salicornia*, &c., and on the sandy beaches round the harbour a shrubby species of *Armeria* flourishes. On the flowers of this plant I took (besides many *Hymenoptera*) several specimens of a very fine red and black *Mordella*-looking thing, and of a nice reddish *Cantharis* with black head and suture; on the plain a very fine *Adesmia* occurred rarely, and several species of *Coleoptera*, chiefly Heteromerous (*Zophosis*, *Pedinus* (?), and others), were to be found sparingly under blocks of lava. Near the landing place two species of *Ocnera* and of a nice genus allied to *Tentyria* were to be found not rarely, and a few *Malacoderms*, *Anthicus* sp., &c., were to be obtained on flowers, but the most interesting things were to be found by looking under the seaweed, &c., on the beach of one of the branches of the harbour. Here I found (besides *Halobates* in plenty, but mostly dead) such things as *Phaleria*, *Trechyscelis* (?), a nice insect near *Crypticus*, a very small testaceous-yellow *Dyschirius*, *Phytosus*, *Philonthus* (nice sp.), *Ptenidium* (swarms), an excessively minute *Acritus* in plenty, &c., &c. Altogether I managed to amass just forty species of beetles here, not bad for such a miserably barren island; of these no fewer than twenty belong to the *Heteromera*.

Among the *Lepidoptera* I took two of a white butterfly, probably a form of the widely distributed African *Pieris hellica*; the little

Lycæna found at Djebel Zebayir was not rare here, but very active and hard to catch, as was also a little *Pyrgus* very like ours; besides these I saw *Pyrameis cardui*, but did not take it. I was told that great numbers of moths come over in certain winds, large ones among them, but the biggest which I saw was *Deiopeia pulchella*; an *Agdistis*, much smaller than ours, was not rare among the *Armeria*. Most of the time I was there it was blowing very fresh from the southward, which made flying insects very hard to catch. I pinned up a nice little lot of *Hymenoptera*, and secured some fine scorpions and a *Galeodes*, a most formidable looking and very venomous spider-like beast, nearly two inches long. Land shells were rare, I could only find two species, and those only as dead specimens, but I collected a nice little set of marine shells from the rocks on the north side of the island. Altogether I do not consider that I did so very badly at Perim.

9.30 a.m., April 5th. Arrived at Aden half-an-hour ago; we coal and leave for Colombo (Ceylon) on the evening of the 7th. No doubt I shall be able to get a run on shore here (indeed, the Captain is desirous that I should take every opportunity of landing, which you may be sure I am by no means loth to do); but it looks a very barren and uninviting place, nothing but black, rugged volcanic rocks, attaining a height of 1700—1800 feet, and with only the very faintest tinge of green here and there, still, I have no doubt that there are things to be got for the working—at any rate, I must have a try before we leave. The heat is very trying (85° in the shade as I write), but so far I have had very good health ever since leaving England.

Aden: *April 5th*, 1890.

THE LIFE-HISTORY OF THE NEW *TINAGMA* (*T. BETULÆ*) OF THE BIRCH.

BY JOHN H. WOOD, M.B.

I had been in the habit, when searching the birch bushes—that richest of plants for micro larvæ—of occasionally finding a leaf from which a small oval piece had been cut out close to the mid-rib, but, thinking it was probably *Tinagma resplendellum*, making trial of a new food, I took no particular notice, until one day happening to look a little more critically, I was surprised to find that the larva, whatever it might be, had at first lived in the twig, and had only entered the leaf, which it did by passing up the stalk, in order to cut out its case.

and that, therefore, it could scarcely be *resplendellum*. Mentioning the matter to Mr. Stainton, he wrote back that he thought it had been already worked out years ago in the "Intelligencer," and the insect proved to be Coleopterous.

Still, as he could not put his hand on the article, there was room for doubt. Nevertheless, a season or two was allowed to pass without pursuing the subject. But, in the summer of 1889, I took up the question in earnest, though not in the most sanguine of moods, either as to what I should find, or whether, indeed, I should find anything at all, for, as the larva would not be likely to stay long in the leaf before cutting out its case, and dropping to the ground, the chances of detecting it would be small. However, difficulties often vanish when they are approached, and the collection of the unknown birch miner proved to be far easier than was anticipated. It is well known that most larvæ that live within growing tissues produce distortion of some kind or other in the tissue, by which their presence may be known. And so, the larva under discussion, being no exception to the rule, causes a slight general thickening for two inches more or less at the end of the shoot, quite sufficient to enable one with a little practice to distinguish it from the natural shoot, which tapers gracefully. The existence of so good a clue was, indeed, fortunate, because, as I afterwards learnt that the larva only spends a few hours in the leaf, and these few hours almost invariably at night-time, collecting it by the leaf would have been utterly hopeless.

The first larva was found on July 11th; at that time no leaves with the cases cut out could be seen, but from the middle of the month onward, vacated mines, as shown by the leaf, grew more and more common, until at the end of the month the search, being no longer profitable, was given up. I obtained altogether from the collected twigs eleven or twelve cases, similar in shape and size to those of *resplendellum*, from which five moths were bred this summer. The cases were kept out of doors all the winter, and it was somewhat singular that only those produced the moth that were lying loose on the ground, whilst all those that had attached themselves to the birch twigs or to the sides of the vessel, and seemed more favourably situated, were unfruitful.

The mine is long for so small an insect, and measures from three to four inches before it enters the terminal leaf of the shoot, from the outside edge of which, close to the insertion of the stalk, or from further on in the centre, the case is cut. It commences near the surface of the woody axis, keeping in that tissue for about three quarters of an inch, and then somewhat abruptly, indicating, I believe, that the first moult has been accomplished, enters the pith chamber, in which it afterwards keeps. Occasionally the first portion runs backwards, but it is invariably changed to a forward direction as soon as the pith chamber is invaded. I have been unable to find any remains of the egg, but I feel sure it is deposited at the spot where the mine is found to commence; the insect, so far as can be judged by the examination of a dry specimen, being provided with a cutting ovipositor, quite capable of penetrating the bark of a twig. Probably, the site of the egg, which, when the larva is full grown, is usually removed by two internodes from the end of the shoot, was at the time of laying, the actual end itself, and, therefore, tender enough for the ovipositor to pierce. This would explain, too, why the larva occasionally mines backwards at starting.

I imagine that on these occasions the tissues at the time of hatching are still very immature, and that, instead of eating away forwards and jeopardising the terminal vitality of the shoot, the larva wisely works in the opposite direction. That it has a marvellous knowledge of the geography of its surroundings is shown by the ease with which it finds the leaf stalk; there is no experimental boring here and there to hit it, but the larva enters at once without any hesitation, taking no doubt as its guide the fibro-vascular bundle given off to the leaf. It might be thought perhaps that the little creature was sometimes just a trifle puzzled, because it may at times overshoot the mark a bit and have to retrace its steps, but I am persuaded that it knows very well what it is about, and passes by the leaf stalk in the first instance only for the reason that it is not yet quite mature enough for entering it.

The larva has neither thoracic nor anal legs, and the four pairs of ventral ones are very small and ill-developed. The thoracic segments are broad, the ventral more slender and tapering towards the anal extremity. The head is small and flat, retracted under the 2nd segment, and has the posterior lobes produced. In the penultimate skin the colour is whitish, with the intestinal contents red. The head shining black. A T-shaped blackish mark (the cross line posterior) on the back of segment two, and on the under-side a pair of blackish longitudinal lines. There are three anal plates, grey with black margins; one is placed on the flap, the others latero-ventrally beneath it. In the last skin, colour white. Head pale brown. Segment two entirely grey on both sides; a faint grey spot (plate) on the back of three, and a still fainter one on the venter; a small ventral plate on four, better recognised by its texture than by its colour. The three anal plates very pale brown with red margins. Compared with *resplendellum* in the last skin, that larva has the head dark grey; the 2nd segment blackish on both sides; and distinct black plates on the dorsum of three and on the venter of three and four. The three anal plates grey with black margins.

In spite of its want of thoracic legs, it is able to crawl about in its case, and even to climb up in a slow and laborious manner a vertical surface. Stretching the thoracic part of its body out of the case to its full extent, it reaches upwards and spins a crossbar of many threads to the surface of the object, when, contracting its body, it draws up the case to the silken bar; and then goes through the same process again. Thus, in this measured way and making step by step its own ladder, it will mount the slippery sides of a glass vessel. But how does it, without the aid of legs, retain its hold of the old rung whilst spinning a fresh one? The only hypothesis I can frame is, that it fastens the case to the rung by a thread just strong enough for support, but not so strong that it cannot be broken by the muscular effort of the animal.

Tarrington, Ledbury:
September 19*th*, 1890.

DESCRIPTION OF *TINAGMA BETULÆ*, *n. sp.*

BY H. T. STAINTON, F.R.S.

Exp. al., 2½—3 lines. Anterior wings dark grey, with a slight bronzy gloss, a white spot on the inner margin near the base (sometimes indistinct), and a large white spot (rather triangular) on the inner margin beyond the middle; the anal angle of the anterior wings seems more produced than in the allied species, and hence the slope of the hind margin is much less oblique.

T. grisescens from Palestine (Tineina of Syria and Asia Minor, p. 51) differs by the anterior wings being *not glossy*, and with *numerous white atoms in the apical half*.

Lewisham: *September* 20*th*, 1890.

SOME REMARKS ON THE GENUS *XYLOPHILUS*, WITH DESCRIPTIONS OF TWO SPECIES FROM JAPAN.

BY G. C. CHAMPION, F.Z.S.

Having recently described no less than thirty-five species of *Xylophilus* from Central America (Biol. Centr.-Am. Col., iv, 2, pp. 166, *et seq.*), and made some remarks on the genera formed at its expense, I now propose to make some additional observations on the genus as a whole, after a comparison of these American species with numerous others from Europe and Japan.

Xylophilus (with *Phytobænus*, *Euglenes*, *Aderus*, *Anidorus*, and *Olotelus*) is, by most authors, European and American, included in either the *Anthicidæ* or the *Pedilidæ*; in the last European Catalogue (Heyden, Reitter, and Weise, 1883) it is placed in the latter, while Leconte and Horn (Class. Col. N. Am., p. 411 [1883]) include it in the former, and treat the *Pedilidæ* as a section of the same family. I have already (*op. cit.*) expressed my opinion that the genus does not belong to the one or to the other, and that it required a separate Family, the *Xylophilidæ*, for its reception. This has, in fact, already been proposed by Thomson (Skand. Col., vi, p. 367), who is the only author, so far as I am aware, who has observed one of the most important characters of the genus, viz., the connate first and second ventral segments of the abdomen; Lacordaire, Mulsant and Rey, Jacquelin-Duval, and Leconte and Horn, all including *Xylophilus* in groups or Families stated to possess five (distinct or free) ventral segments, exclusive of the short and sometimes visible sixth. This character, in conjunction with the form of the antepenultimate joint of the tarsi*—produced beneath into a long and rather broad lobe, which extends beneath the very small penultimate joint to beyond the base of the apical one, the lobe itself being emarginate at the apex—shape of the head, &c., distinguish the Family *Xylophilidæ* at once from all others of the *Heteromera*.

Very many of the Central and North American representatives do not fit satisfactorily into the various "genera" or "sub-genera" into which *Xylophilus* has been divided. These genera or sub-genera, it may be remarked, are based entirely upon European forms, and some of them upon single species only; their characters are taken chiefly from the form of the eyes or of the antennæ, differences of specific rather than of generic value. The North American species differ quite as much *inter se* as do those of Europe, but American authors have not as yet proposed to separate any of them from the genus *Xylophilus*; nor have I thought it necessary to separate any of the still more variable and more numerous Central American forms. The named genera or sub-genera are:—

1. PHYTOBÆNUS, Sahlb.: this in the last European Catalogue is retained as a distinct genus; it includes a rare insect of Boreal Europe, *P. amabilis*, Sahlb. (= *bisbimaculatus*, Hampe), for a type of which I am indebted to Herr E. Reitter; and the Japanese *X. scapularis*, Mars., is so closely allied to Sahlberg's species as to be inseparable from it. *Phytobænus* can, at most, only be regarded as a section of *Xylophilus*.
2. EUGLENES, Westw.: contains species with very elongate serrate

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* Mistaken for the penultimate by Lacordaire and Westwood.

antennæ in the male sex. *X. oculatus*, Gyll. (=*pygmæus*, Muls.), and *X. pygmæus*, Degeer (=*populneus*, Fabr.), belong to it. One only of these, the latter, is known as yet as British, though it seems not unlikely that both may eventually be found here. *Euglenes* is apparently not represented in the New World.

3. ADERUS, Westw.: includes the well-known European *X. boleti*, Marsh. (=*populneus*, Panz.), the Japanese *X. gibbulus*, Mars., and the Central American *X. tantillus*, Ch. It has in both sexes the second and third joints of the antennæ very short and subequal, together not equalling the fourth in length.
4. ANIDORUS, Muls. & Rey: contains the European *X. nigrinus*, Germ., *X. sanguinolentus*, Kies., &c. It seems chiefly to be distinguished by the stout and elongate third antennal joint in the male. I have not seen any American species quite agreeing with it.
5. OLOTELUS, Muls. & Rey: contains chiefly those species that will not fit into either of the preceding groups. I fail to discover any salient character by which to distinguish it. Its authors included it in *X. punctiger*, Muls. & Rey, *X. pruinosus*, Kies., *X. flaveolus*, Muls. & Rey, and *X. neglectus*, Duv. (= *nigripennis*, Villa); and five others are placed in it in the last European Catalogue.

Amongst the American species are to be found numerous groups or sections of the genus of equal or greater value, of which four of the most important may be particularized:—

1. Antennæ strongly flabellate in the male, simple in the female.
   X. Melsheimeri, Lec., *X. flabellatus*, Ch., &c.
2. Antennæ stout; filiform or subfiliform, and with very elongate apical joint in the male; thickened outwardly and with apical joint ovate in the female. Hind femora broadly dilated in the male.
   X. lacertosus, Ch., *X. forticornis*, Ch., *X. basalis*, Lec., &c.
3. Antennæ (♂) with joints 1—3 slender, and 4—11 flattened and subtriangular; thorax 4-foveate; hind femora (♂) very stout. *X. femoralis*, Ch.
4. Sides of the thorax more or less dilated in front and compressed at the middle; eyes small in both sexes and almost bare; body elongate and Anthiciform.
   X. anthicoides, Ch., *X. quercicola*, Schwarz, &c.

The total number of species recorded is now about 100—Europe 23, Algeria 5, Japan 8, Ceylon 3, America north of Mexico 16, Central America 37, &c.; none are yet known in America from south of the Isthmus of Panama, but representatives of the genus are certain to be found there eventually.* Notwithstanding their small size the males of many of them exhibit very well-marked peculiarities (apart from sexual distinctions in the form of the eyes or of the antennæ), and in a few cases the females also; these peculiarities are most highly developed in some of the species of Central America, and in one of those from Japan described below. The following characters appertain to the male sex only:—(1) a sharp tooth, of variable length according to the species, at the inner apical angle of the anterior tibiæ (sometimes present on the middle tibiæ also); this is not to be confounded with the almost or quite obsolete tibial spurs. (2) a curvature or an abrupt bending inwards of the anterior tibiæ. (3) a somewhat similar form of the middle tibiæ; this is developed in an extraordinary degree in the Japanese *X. distortus.* (4) a thickening or dilatation of the posterior femora (common to many species, and sometimes accompanied by an angular extension on the inner, or very rarely on the outer, side of the femur). (5) a groove or pouch-like excavation along the inner side of the posterior femora, sometimes ciliate, sometimes spongy, sometimes almost smooth, within, the groove not always accompanied by an incrassation of the femur (when unaccompanied by such an incrassation the femora are usually expanded along either side of the groove, the pouch-like appendage thus formed being often of a darker colour than the rest of the limb—this is well seen in *X. fragilis*, Ch.). (6) a flattening or slight curvature of the posterior tibiæ.

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* Since these remarks were written I have seen in Marseul's collection in Paris (now the property of the Museum d'Histoire Naturelle) and in the collection of M. René Oberthür at Rennes numerous unnamed species of Xylophilus from Tropical South America.

Several of these characters are sometimes present in one species, *e. g.*, *X. lacertosus*, Ch.

As regards the female characters one only is to be noticed, the others being merely negative. (1) a matted tuft of fulvous hairs, sometimes spine-like, at or above the outer apical angle of the posterior tibiæ; this is present in several species (*X. lacertosus*, *X. forticornis*, &c.), though apparently not hitherto noticed by authors.

XYLOPHILUS DISTORTUS, *n. sp.*

Black, the elytra broadly and indeterminately flavo-testaceous at the base, and thence to the apex brownish or piceous-brown, the upper surface shining and clothed with fine decumbent pubescence. Head short, closely and rather coarsely punctured; eyes coarsely granulated, moderately large, widely separated in the female, more approximate in the male, the head extended on either side behind them; antennæ black or piceous, widening a little outwardly and subfiliform in both sexes, rather stout, joint 3 much longer than 2, 3—9 longer than broad, 10 a little shorter in the male, transverse in the female, 11 obliquely acuminate at the tip and similar in both sexes; prothorax transverse, as wide as the head, the sides parallel behind and slightly rounded in front, the disc with an obsolete depression on either side before and another behind the middle, and sometimes with traces of an obsolete central groove, the surface densely and rather coarsely punctured; scutellum densely punctured; elytra moderately long, very much broader than the prothorax, the sides parallel at the base and converging from about the middle, the surface closely and coarsely punctured throughout, the base a little swollen on either side of the scutellum; beneath piceous and thickly pubescent; legs piceous, the knees and coxæ lighter, the tarsi (the basal joint of the hind pair excepted) testaceous; the femora slender, the hind pair stouter in the male.

♂. Anterior tibiæ armed with a very long sharp tooth at the inner apical angle, and slightly curved; intermediate tibiæ sinuously curved and very broadly dilated, convex without and concave within, the outer edge gradually widened out into a broad and acute triangular tooth, the tooth followed by a very deep and abrupt semicircular emargination, the inner edge deeply and abruptly sinuate-emarginate at the middle; the hind femora thickened and dilated, and with a pouch-like groove on the inner edge extending almost from the base to the apex, the edges of this groove being densely fringed with very short fulvous hairs; the hind tibiæ curved in their basal fourth and thence to the apex straight.

♀. Hind tibiæ straight, with a matted spine-like tuft of fulvous hairs on the upper-side at the extreme apex; the four anterior tibiæ simple; the antennæ a little shorter than in the male. Length, 3 mm. (♂ ♀).

Hab.: JAPAN, Nikko and Kobé.

Three examples, two females and one male, of this interesting species were captured by Mr. G. Lewis, the two former at Kobé in June, 1881, and the latter at Nikko on June 8th, 1880. In the peculiarly distorted shape of the intermediate tibiæ in the male it differs from all others of the genus yet described. *X. distortus* is very much larger than either of the previously described Japanese species.

XYLOPHILUS JAPONICUS, *n. sp.*

Black, the elytra with a large spot at each shoulder and the apical fourth reddish-testaceous, the upper-surface clothed with rather coarse, decumbent, ashy pubescence. Head short and broad, closely and rather coarsely punctured; eyes large, coarsely granulated, somewhat widely separated, the head very narrowly extended on either side behind them; palpi testaceous; antennæ (♂) moderately stout, filiform, joint 3 one-half longer than 2, 3 and 4 subequal, 5—8 shorter than 4, 9 and 10 about as broad as long, 11 obliquely truncate and acuminate, piceous, the tip of the last joint ferruginous; prothorax narrower than the head, broader than long, the sides parallel behind and a little rounded in front, the surface densely and rather coarsely punctured; elytra parallel in their basal half, considerably broader than the prothorax, coarsely and closely punctured throughout; legs moderately stout, flavo-testaceous, the tips of the four anterior femora and the posterior femora and posterior tibiæ (except at their base) piceous; posterior femora stout and clavate, and the anterior tibiæ slightly curved and with a short tooth at the inner apical angle, in the male. Length, 2 mm. (♂).

Hab.: JAPAN, Hitoyoshi.

One male example captured by Mr. G. Lewis on May 8th, 1881.

Allied to *X. quadrimaculatus* and *X. brunnidorsis*, Mars., but differing from both in the maculation of the elytra; the antennæ are shorter than in the same sex of either of these species and entirely piceous, except the tip of the last joint. The female, doubtless, has shorter antennæ. Allied forms inhabit Central America.

In Marseul's collection an example of this species (received from Mr. G. Lewis) does duty for *X. quadrimaculatus*; a male of the latter before me differs from the same sex of *X. japonicus* in the longer and entirely reddish-testaceous antennæ, in the longer thorax, and in the elytra being reddish-testaceous, with an elongate-triangular scutellar patch, a common transverse fascia beyond the middle, and the suture indeterminately piceous.

11, Caldervale Road, Clapham:
August, 1890.

TWO SPECIES OF *PSOCIDÆ* NEW TO BRITAIN.

BY ROBERT McLACHLAN, F.R.S., &c.

ELIPSOCUS CONSIMILIS, *n. sp.*

Closely allied to *E. cyanops*, Rostock, possibly slightly larger. Pale yellow; eyes and ocelli black; antennæ strong, black, pale at the base. Dorsum of thorax and abdomen more or less infuscate. Legs pale yellow; tarsi blackish. Wings hyaline: in the anterior the neuration is stronger than in *cyanops*, and the black dots at the commencement of the pterostigma and the end of the anal vein are much more conspicuous; posterior areole obtuse at the top, but apparently less rounded than in *cyanops*.

I beat about a dozen examples from *Pinus sylvestris*, at Westbourne, near Bournemouth, on August 28th, 1890, and I find five examples from Tuddenham Heath, Suffolk, June 27th, 1880, mixed with *E. cyanops* in my collection.

Having compared a series of examples of *E. consimilis* with a like series of undoubted *E. cyanops*, I am forced to the conclusion that the former is distinct. They do not mix themselves locally, and the characters pointed out appear to be constant. The body colour of *consimilis* is less bright, and this is heightened by the obscure coloration of the dorsum of thorax and abdomen. When alive, *cyanops* is very bright, and the colour gives the idea of being pale orange, not at all noticeable in *consimilis*. My old specimens from Tuddenham quite agree with those from Bournemouth.

PERIPSOCUS PARVULUS, *Kolbe*.

P. alboguttatus, var. *parvulus*, Kolbe, Monogr., Jahresb. Westfal., 1879–80, p. 131; *P. parvulus*, *id.*, Ent. Nachr., viii, p. 211; *id.*, in Rostock's Netzflügler Deutschlands, Anhang, p. 188.

Allied to *P. phæopterus*, Steph., but about one-fourth smaller, and the wings much paler. The entire body is dark brown, with black eyes and ocelli. Wings pale hyaline-grey, with darker neuration.

Forma microptera, ♀. With rudimentary wings, scarcely one-half the length of the abdomen in the living insect, and with abbreviated reticulation.

About two dozen examples were taken on the outskirts of Lyndhurst, New Forest (August 31st and September 1st, 1890), on a paling. All stages were abundant on the green "mould" which covered the sides of the split branches of which the paling was composed. Overhanging this paling was a growth of mixed shrubs, and above the spot (a few feet only) where the insects occurred was a yew (*Taxus*), but I did not succeed in obtaining any of them from it, and I have no doubt they fed on the "mould."*

Kolbe knew of only a single specimen from Westphalia, and at first placed it as a variety of his *alboguttatus* (*nec* Dalm.; = *subpupillatus*, McLach.), afterwards, in Ent. Nachr., he considered it a distinct species, and in his appendix to Rostock's work it is made to follow *phæopterus*, and end the genus.

That my insect is specificially different from *phæopterus* there can be no doubt, according to its small size and *very pale* smoky-grey wings, which are much paler (and the insect much smaller) than the occasional pale forms of the ♂ of *phæopterus*.

Naturally, it is slightly risky to identify a species with one described from a single specimen only in so obscure a group, but my insect quite accords with Kolbe's description, and I have a long series which certainly maintain its distinction from *phæopterus*, to which it is no doubt allied, rather than to *subpupillatus*.

I think I have both sexes of the fully-winged form; that with aborted wings is certainly ♀.

In Ent. Nachr. (*l. c.*), and in Rostock's Netzflügler (*l. c.*), Kolbe calls attention to a microscopic difference in what he terms the "cell formation" of the membrane of the wings, which is more open in *parvulus* than in the allied species. I have placed the wings under a ¼-inch objective, with A-eyepiece. Under this comparatively low power, I find the membrane in *phæopterus* and *subpupillatus* very densely studded with what appear as minute dark points; in the insect I consider as *parvulus*, these dark points are much less dense; the so-called "points" I take to be the "cells" as defined by Kolbe.

Lewisham, London:
September 8th, 1890.

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* This so-called "mould" is in reality a microscopic *Alga*.

Æschna juncea, L., near Ringwood.—On August 30th, I captured a pair (*in cop.*) of *Æ. juncea* at a small bog pond on the north end of Hern Common, not far from Ringwood. Although it is certainly the common species in the north of England and in Scotland, I was rather surprised to find it in the New Forest district. Casual examples of *Æschna* on road-sides, in glades, &c., were not uncommon, but far too wary to permit of capture. Until I obtained the pair above-mentioned, I put down all these "casuals" as *cyanea*; probably the majority of them were that abundant southern species.—R. McLachlan, Lewisham, London: *Sept. 5th*, 1890.

Gymnancyla canella in September.—My friend, Mr. Ford, of Hastings, kindly sent me a few pupæ of this species early this year, enclosed in their curious sand cocoons. Instead of emerging in June, which I believe is their usual time, or at least the date given in books, they have taken it into their heads to emerge now, the first appearing on the first of this month, and another has just emerged to-day; is this usual or otherwise?—A. E. Hall, Norbury, Sheffield: *September 9th*, 1890.

Aplota palpella in Wilts.—About the middle of August I beat a fresh specimen from an isolated elm at Ramsbury; it seems to have been rarely observed in this country, probably from ignorance of its habits. Heinemann seems to say that it rests on tree trunks, and I have, accordingly, several times searched this particular trunk, but without result.—E. Meyrick, Ramsbury, Hungerford: *Sept. 7th*, 1890.

Hibernation of Simäethis pariana.—In the July number of this Magazine the late Dr. Jordan, in his paper on the British *Macro-Lepidoptera* which hibernate in the perfect state, referring to *Simäethis pariana*, says, "Has been beaten from thatch by me as late as November, but has not been ever taken in early spring; the thatch specimens were probably only late survivors."

Notice not having been taken of these remarks, it would therefore appear that uncertainty exists whether this species does hibernate or not; so it will be as well to clear up any doubt upon the subject by recording that I have on more than one occasion obtained this insect in the early spring, when working thatch for hibernated specimens of the genus *Depressaria.*—B. A. Bower, Lee, Kent: *Sept. 17th*, 1890.

Gyrinus urinator at Swanage.—I found two or three specimens of this species last June in the stream running through Swanage, Dorset.—C. H. Goodman, 9, Dorlcote Road, Wandsworth Common, S.W.: *August 6th*, 1890.

Carabus glabratus, Payk., in Ireland.—I have lately received specimens of this species from Mr. J. W. Carter, of Sunderland, who tells me that he took a considerable number on Carn Tual (3418 feet); he adds the following note:—"I imagine the kestrels, which are pretty common in Kerry, must destroy a good many. I found the remains of several in their pellets on the mountains, together with those of other beetles."—W. W. Fowler, Lincoln: *September 16th*, 1890.

Creophilus maxillosus v. ciliaris, Steph.—On September 6th I captured a specimen of this variety at Ashtead, in Surrey; it has not hitherto been recorded from the London district.—Horace St. J. K. Donisthorpe, Belvedere, Crystal Palace Park Road, Sydenham, S.E.: *September 8th*, 1890.

Athous rhombeus, Ol., at Cobham Park.—I beg to record that I took a specimen of *Athous rhombeus*, Ol., on July 10th last, in a rotten beech tree in Cobham Park; I noticed a rather sweet smell, so attacked the rotting part, and found this beetle only a short time emerged from its pupal case, as the elytra were quite soft.—JAMES MALINGS, Shooter's Hill, Kent: *August* 21*st*, 1890.

Note on Scopæus Erichsoni and Hydroporus Davisii.—The *Scopæus* ? sp. from Ludlow and Bewdley (*ante* p. 190) appears to be the true *S. Erichsoni*, M. Fauvel informing me that it agrees in every way with continental examples of that species. Canon Fowler's description of *S. Erichsoni* is either erroneus or applicable to another species, inasmuch, as in my beetle the 7th segment of the male has not the slightest trace of a tooth in the middle. I have examined a good many specimens, and find the male characters very constant. Since my last note, as above referred to, I have taken *Hydroporus Davisii* in Dowle's Brook, Bewdley Forest, and in the Lightspout at Church Stretton. I should like to point out here that Church Stretton is in Shropshire, not "Cheshire," as erroneously stated in Canon Fowler's 4th vol. "Coleoptera of the British Islands."—W. G. BLATCH, Knowle, Birmingham: *July* 17*th*, 1890.

[I have never had the good fortune to see a *Scopæus* alive; the figure of the 7th segment of the male, as given by Mulsant and Rey (Histoire Naturelle des Col. de France, Pédériens, plate v, fig. 7), shows a blunt toothlike prominence in the middle; it may have been drawn from a shrivelled specimen.—W. W. F.].

Coleoptera in the New Forest.—The first fortnight of August I spent at Lyndhurst, and devoted most of my time to looking up the sub-cortical beetles. Decaying wood, both standing and fallen, was fairly plentiful, and, though I obtained nothing absolutely new to my collection, I came across several species with which I had never met before. The most noticeable captures were the following: *Synchita juglandis*, two specimens, from a dead standing beech, the bark of which was just ready to come away. The same tree also produced four *Cryphalus fagi*, one *Cistela alba*, three *Litargus bifasciatus*, and a lot of *Rhinosimus ruficollis*, *Thymalus limbatus*, seven specimens; this insect appears to prefer the loose bark on the *branches* of standing oaks, and sometimes takes shelter under a fragment scarcely large enough to conceal it. When living, the pubescence gives it a curiously mouldy appearance, and I quite thought for a moment that the first specimens which I found had been dead for several months. *Scaphidium 4-maculatum* and *Scaphisoma boleti* were common under fungus-covered logs, from which the bark had not been removed. *Cænocara bovistæ*, three specimens, from a standing oak; *Leptura scutellata*, one, sitting on newly-cut faggots; *Prionus coriarius*, one, under dead leaves at the roots of an oak; *Cerylon angustatum*, very common under bark of oak and beech; *Heledona agaricicola*, one, from white fungus in a hollow tree; *Ptinus 6-punctatus*, one, sitting on the shutter of a shop-window in the village. Under the bark of decaying logs I found *Euplectus nigricans* and *bicolor*, *Bythinus Curtisi*, plentifully, *Paromalus flavicornis*, *Abræus globosus*, *Lathridius elongatus* (1), and a couple of *Liodes orbicularis*. *Boleti* produced *Cis fuscatus*, *bidentatus*, and *nitidus*, and a small sand-pit was swarming with *Syntomium æneum*, which had fallen in from above, and were vainly trying to find their way back to freedom.—THEODORE WOOD, Baldock, *Herts*: *September* 3*rd*, 1890.

Quedius tristis predacious.—I have this afternoon witnessed a curious and, to me, quite novel sight. My attention was called to a daddy-long-legs, which was walking over the grass on my lawn in a very erratic manner, and carrying some long, black object upon its back. Upon closer examination, this object proved to be a specimen of *Quedius tristis*, which was clinging closely to the *Tipula*, and busily devouring the upper portion of its thorax. I watched it for some minutes, during which the beetle did not appear in the least degree incommoded by the struggles of its victim, which managed to stumble along for three or four yards while being thus slowly devoured. I have never before known a *Quedius* to devour living insects, and should like to know if any of your readers has met with a like experience.—ID.: *September 8th*, 1890.

Aëpophilus Bonnairii.—Whilst on the beach at Lyme Regis (Dorset), on the 12th of last month, I caught a specimen of what I believe to be *A. Bonnairii*, and under the same circumstances as mentioned by Mr. J. H. Keys, but all my after searches were unavailing. My capture was near sunset, and though the tide was rising, the animal showed no inclination to stir from his post, which was considerably below high water mark.—WM. R. KILBURNE, 38, Finsbury Pavement, London, E.C.: *September 15th*, 1890.

Obituary.

Peter Maassen was born at Duisburg, on the Lower Rhine, on December 9th, 1810. He was at first intended for the Church, but ultimately entered the service of the Berg-Märkisch Railway, in which he remained for about 36 years, and at length rose to the rank of Control-Chef, or Superintendent. During this time he was at first stationed at Aix-la-Chapelle, but was afterwards transferred to Elberfeld, whence he removed to Düsseldorf in the spring of the present year.

Herr Maassen succeeded in forming a very extensive collection of European and Exotic *Lepidoptera*, and travelled and collected in various parts of Germany, Switzerland, Italy, &c., and also visited Paris and London more than once. He was not a voluminous writer; his principal work being his "Beiträge zur Schmetterlingskunde," consisting of a series of illustrations of *Saturniidæ*, in small folio, five parts of which were published at intervals. The first of these appeared in 1869. In the later parts he was assisted by his friend, Gustav Weymer. Other papers (chiefly reviews, or accounts of collecting tours) have appeared from time to time in the "Stettiner entomologische Zeitung."

Herr Maassen retired from his official duties on a pension some years ago, but retained his faculties and interest in Entomology to the last; and, notwithstanding his advanced age, set out in July for a tour in the Black Forest. At the beginning of August he was at Falkensteig, and on the morning of the 2nd, his niece, who accompanied him, found that he had expired suddenly during the night. He was buried at Erkrall, near Düsseldorf, by the side of his wife.

Herr Maassen was a man of cheerful, friendly disposition, and his death will be widely regretted by all who knew him, either as an Entomologist or as a friend.—W. F. K.

Societies.

Birmingham Entomological Society: *August 18th*, 1890.—Rev. C. F. Thornewill, Vice-President, in the Chair.

Mr. Thornewill showed a nearly black ♂ *Argynnis Aglaia*, from Cannock Chase; also an *Arctia Caia*, of a curious brick-red colour; also *Stilbia anomala*, from Cannock Chase. Mr. E. C. Tye showed a number of *Noctuæ* bred from larvæ found feeding on low plants at night, at Hopwas Wood and Marston Green. Mr. R. C. Bradley showed *Brephos notha*, bred from a ♀ taken at Trench Woods. He also showed *Chrysoclista bimaculella* from Wyre Forest. Mr. H. M. Lee showed a number of *Lepidoptera* from Sutton Coldfield. Mr. G. H. Kenrick read a paper on "Collecting in N. Wales," in which he referred to the comparatively small number of species found there, considering the great variety of ground and climate. He thought it might be accounted for by the great rainfall. Mr. Neville Chamberlain made a number of remarks on the *Macro-Lepidoptera* found by himself and Mr. Kenrick, while staying at Barmouth, between July 4th and 9th this year; they had taken 108 species, including *Cucullia absinthii*, *Acidalia contiguaria*, &c. Mr. H. M. Lee mentioned a habit he had noticed in larvæ of *Thyatira batis*, of falling to the ground when a noise is made.—Colbran J. Wainwright, *Hon. Sec.*

Lancashire and Cheshire Entomological Society.—The monthly meeting of this Society was held on Monday, September 8th, in the Free Library, the President (Mr. S. J. Capper, F.L.S.) occupying the Chair. Mr. Edward Porritt, of Huyton, was elected an ordinary Member of the Society. Mr. P. Schill, Manchester, was proposed for Membership. Mr. W. E. Sharp proposed, "That it is desirable to decide upon a district, to be called the Liverpool and Chester district, and adopt an official register of additions to the recorded fauna in the classes *Insecta* and *Arachnida* in such district." After some discussion it was decided, "That the district to be adopted for recording the insect fauna shall include the whole of Lancashire and Cheshire, and that an official register of additions be kept and published in the annual report of the Society." The Rev. H. H. Higgins drew attention to the occurrence of *Authrax hottentota* this year at Crosby. Mr. S. L. Mosley, of Huddersfield, read a paper on "British Bees," which was of an elementary character, intended to induce young collectors to take up the study of this group of *Hymenoptera*. The exhibits, of which there was a good show, included a most curious variety of *Argynnis Euphrosyne*, from Coventry, and dark varieties of *Cleora glabraria*, from the New Forest, by the President; cases of economic entomology, prepared for the Edinburgh Royal Botanic Gardens, by Mr. S. L. Mosley; *Eupithecia extensaria*, from Norfolk, by Mr. C. G. Barrett; bees and wasps collected round Chester, and local *Coccidæ*, by Mr. Robert Newstead; dark greenish variety of *Bombyx quercûs*, by Mr. C. H. Walker; a fine series of *Bombyx trifolii*, and other recent captures, by Mr. G. Harker.—F. N. Pierce, *Hon. Sec.*, 143, Smithdown Lane, Liverpool: *September 15th*, 1890.

The South London Entomological and Natural History Society: *August 28th*, 1890.—J. T. Carrington, Esq., F.L.S., President, in the Chair.

Mr. C. Fenn exhibited an example of *Polyommatus Phlæas*, L., having the left *lower wing* small and pale, *Odontia dentalis*, Schiff., from amongst *Echium vulgare*, *Crambus contaminellus*, Hb., *Grapholitha cæcana*, Schl., and *Sphaleroptera ictericana*, Haw., all from Deal; *Pædisca Solandriana*, L., from Bexley, *Carpocapsa grossana*, Haw, from Mickleham; also a large number of *Cidaria truncata* Hufn., bred from ova obtained from a captured female, which was exhibited. Mr. South pointed out that the parent moth was a variety, and that half the brood varied from the type in the same way. Mr. Carpenter exhibited *Pericallia syringaria*, L., bred from larvæ taken in Essex, and *Cucullia asteris*, Schiff., from Folkestone. Mr. South, local forms of *Lepidoptera* from the Durham district. Mr. Turner, *Myelophila cribrum*, Schiff, from Leigh, Essex. Mr. R. Adkin, *Zygæna meliloti*, Esp., from the New Forest, and remarked upon the disappearance of this species from the particular locality where it was originally taken, and its discovery in another part of the Forest. Mr. Waller, living larvæ of *Acronycta leporina*, L., and an example of *Smerinthus ocellatus*, L., which had emerged from the pupa with one antenna. Mr. Robinson, *Nonagria brevilinea*, Fenn. Mr. Joy, *Plusia festucæ*, L., larva and pupa, and remarked that this species was apparently double-brooded, as he had taken it in the latter part of August. Mr. Tutt expressed an opinion that the species was consecutively-brooded in June, July, and August. Mr. Hawes, young larvæ of *Apatura Iris*, L., and stated that the larva had no horns before the third skin; also *Tapinostola extrema*, Hb., from Huntingdonshire, caught July of this year. Mr. Frohawk, a variety of *Epinephele Hyperanthus*, L., with the markings lanceolate, from the New Forest. Mr. Weir mentioned that he had two of the same variety also from the New Forest. Mr. Carrington, that after examining hundreds of this species in the same locality, he had only been able to find the var. *Arete*, Müll. *Coleoptera* were exhibited by Mr. Perks. Mr. Carrington made some observations on collecting *Rhopalocera* in the Ostend district, and a discussion arose as to the abundance or scarcity of *Lepidoptera* this season, in the course of which it was stated that *Lycæna Corydon* had been generally scarce, and that, with a few exceptions, it had been a bad season for *Lepidoptera.*

September 11th, 1890.—J. Jenner Weir, Esq., F.L.S., Vice-President, in the Chair.

Mr. Robertson exhibited a living larva of *Acherontia Atropos*, L., from near Bognor. Mr. Oldham, a very light specimen of *Polyommatus Phlæas*, L., a dark form of *Argynnis Euphrosyne*, L., also examples of many other species, including *Hesperia lineola*, Ochs., from the Fens of Huntingdon. Mr. Wellman, *Bryophila muralis*, Forst., *Dianthœcia albimacula*, Bork., *Plusia festucæ*, bred from pupæ received from Cambridge, also living larvæ of *Acronycta euphorbiæ*, Fb. Mr. J. A. Cooper, dark specimens of *Bryophila perla*, Fb., from Folkestone. Mr. Carpenter, a specimen of *Argynnis Paphia*, L., with the right under-wing almost colourless, a variety of *Argynnis Aglaia*, L., with the spots on the under-side blending together, also a series of *Epinephele Hyperanthus*, L., showing considerable variation. Mr. R. Adkin, bred specimens of *Emmelesia decolorata*, Hb., from Ireland, larger and more defined in colour than those usually taken. Mr. T. D. A. Cockerell, *Vanessa Antiopa*, L., from Wet Mountain Valley, Colorado, and called attention to the irroration of the borders with black, a feature specially noticeable in American specimens of the species; also three species of *Cetonia* from Syria, viz.: *Cetonia opaca*, Fb., *C. floricola*, var. *ignicollis* (Dej.), Gory and Peach, and *C. impavida*, Janson; with reference to the last named species, Mr. Cockerell stated the specimens appeared to be specifically identical with this Indian species, as they appeared to agree in all essential points with an example in the British Museum from Aden, named by Mr. Janson. The distribution of the species, therefore, appeared to be India, Aden, and Syria. Mr. Cockerell also exhibited two examples of *Trichodes* from Syria, one of which he stated apparently agreed with *T. syriacus*, Dej., as described in Spinola's Monograph, but was considerably larger, the other seemed to be a variety of *T. favarius*, Hb. Mr. Oldham exhibited a specimen of *Sirex gigas*, taken in the High Road at Woodford. Mr. T. R. Billups asked whether the large number of *Vespa vulgaris* had been noticed by members: when sweeping at Shirley Heath for *Hymenoptera*, he had obtained eight to a dozen at every sweep of the net. Mr. Rice remarked that near Ockley, within an area of 200 yards, he had counted thirty nests. Mr. South said that in 1879, which was a similar year to the present one, wasps were plentiful all over the country.—H. W. BARKER, *Hon. Sec.*

ENTOMOLOGICAL SOCIETY OF LONDON: *Sept. 3rd*, 1890.—HENRY T. STAINTON, Esq., F.R.S., in the Chair.

Mr. C. Fenn exhibited and remarked on specimens of *Eupithecia satyrata*, *Eudorea ambigualis*, and *Tortrix viburnana* from Darlington.

Mr. H. Goss exhibited, on behalf of Mr. Martin Stanger Higgs, a remarkable variety of *Melitæa Aurinia* (*Artemis*), taken a few years ago in Gloucestershire, by Mr. Joseph Merrin.

The Rev. Dr. Walker communicated some observations on the Entomology of Iceland, and gave an account of his recent travels in that island. He stated that he had taken *Bombus terrestris* this year, for the first time, in the north-west of Iceland, from which quarter of the island it had not been recorded by Dr. Staudinger; he also referred to the large numbers of *Ichneumonidæ* and *Diptera* which he had noticed in the island. He further stated that in 1889, in the months of June and July, *Noctua conflua* was the most abundant species of *Lepidoptera* in Iceland; but that this year, in July and August, *Crymodes exulis* was the prevailing species, and that *Charæas graminis* and *Coremia munitata* also occurred in great numbers. In reply to a question by Mr. Stainton, Dr. Walker said that the flowers chiefly frequented by the humble-bees were those of a small species of white *Galium* (probably, *Galium saxatile*?) and *Viola tricolor*. Dr. Walker also read "Notes on *Calathus melanocephalus* collected in Iceland, the Westmannö Isles, and the Faroe Isles, in June and July, 1890." Messrs. McLachlan, Stainton, Jenner Weir, Stevens, Jacoby, Lewis, and others took part in the discussion which ensued.

Mr. Arthur G. Butler communicated a paper, entitled, "Further Notes on the Synonymy of the genera of Noctuites."—H. Goss, *Hon. Sec.*

THE CITY OF LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, Albion Hall, London Wall.—Meetings: Thursdays, October 2nd and 16th, 1890, at 8 p.m.; the meeting on the 16th inst. will be devoted to a discussion on the family *Tæniocampidæ*, and exhibition of species of this group. Mr. Tutt will give an outline of the genus, its phases of variation, &c., and exhibit his series of the group. Non-Members are cordially invited to attend this meeting.—G. A. LEWCOCK, *Hon. Sec.*, *73*, Oxford Road, Islington, N.

HOW DO COCCIDS PRODUCE CAVITIES IN PLANTS?

BY W. M. MASKELL, F.R.M.S.

Every student of the Family *Coccididæ* must have noticed how, besides the general damage which, in many cases, they inflict upon the plants they live on, they produce, or induce, local particular injuries on the various parts, or at least notable alterations of form or texture. All Coccids do not seem to be mortal foes of vegetable life. Many of them, indeed, destroy more or less rapidly the health of a plant and kill it; naturally in so doing they render it unsightly. Others cannot well be said to be murderous in their attacks, but they do their best to spoil the appearance of plants. Others again are neither very ugly nor very injurious; still, in the spots which they affect, they produce local alterations of form which of course are not natural to the plant. Some of the most harmful, as for example *Icerya Purchasi* or *Mytilaspis pomorum*, seem to exercise no influence on the *shape* of a plant; they waste it away without altering the form of the twigs or leaves. Others produce swellings or "galls" on wood or leaf which, in proportion to their own size, are enormous. I have before me at this moment a branch of *Casuarina* from Australia in which an insect (discovered lately by Mr. C. French, F.L.S., of Melbourne, and as yet not sufficiently identified) has produced such galls. This very curious Coccid, itself of a conical shape, averages scarcely one-fifth inch in diameter and one-sixth inch in height; one of its galls on the twig before me is as big as a large walnut, and is doubtless not exceptionally large. These Coccid galls may probably be accounted for, as they usually are in entomological works, by "irritation of the tissues consequent on the suction of the plant juices through the rostral tubes of the insects." I do not think the explanation is entirely sufficient, as it does not account for the absence of galls in a majority of instances; as all Coccids work in precisely similar ways, and extract the plant-juices by means of suctorial tubes, it might be expected that similar results would follow, yet the gall-producing Coccids are probably only a very small minority in the Family.

But there is another proceeding adopted by some Coccids which is much more puzzling. Allowing that, in plants as in animals, irritation may produce inflammation and consequent swellings, it is not easy to understand how these insects manage to burrow into, and form cavities in, plants. It may, I think, be fairly concluded from the fact which I have just mentioned, viz., the scarcity of Coccid galls, that Coccids do not secrete any acrid or acid fluid which, passing through the tubular rostral setæ at the same time that these are inserted into the stomata or between the cells of the plant, reacts upon the vegetable cells and tissues. Again, with the exception of these setæ, a Coccid as a rule possesses no organs for piercing and cutting. I say "as a rule," because it would appear from Dr. Signoret's Essai that in the genus *Porphyrophora* the anterior feet are "fossorial," and might therefore possibly be used as cutting instruments. But in all other cases, as far as I know, the feet are strictly ambulatory, and in many cases they are absent altogether. Failing a mechanical instrument for excavation, and also a chemical fluid for reacting on the plant-cells, how do Coccids manage to form cavities, more or less deep, for their habitations?

I do not think that the number of "burrowing" species in the Family is large. Here, for the purpose of illustration, I need only refer to a few typical cases, from which it will be seen how various are the effects produced. An example of simple depression in a leaf may be found in the New Zealand species, *Ctenochiton viridis*, *mihi*. This is a Lecanid insect, very large and proportionately thick, and its ventral surface is considerably ([illegible] [illegible] cases) convex. Looked at *in situ*, it seems to be simply lying on the under-surface of the leaf, but when it is removed, there is seen to be in its place a depression, not very deep, corresponding to the convexity of the insect. This depression is usually powdered with white cottony meal, more or less thin, but I cannot say that there is any distinct appearance of alteration in the tissues of the leaf. Another New Zealand insect, *Rhizococcus fossor*, *mihi*, goes a little further. It burrows into the leaf on which it lives a cavity corresponding to the size of its body, and of such depth that it at last sinks into it as in a pit, and often the surface of the leaf curls over the insect and partially encloses it; a curious feature of this proceeding is that the other surface of the leaf is pressed up in a small conical elevation. A point which would, in this instance, seem to indicate some kind of chemical action is that the top of the elevation is usually dark brown, the normal colour of the leaf being dark green.

The two insects just mentioned live on leaves, and have therefore soft material to work on; but *Xylococcus filiferus*, Löw, an insect in Austria, lives in the axils of the twigs of *Tilia europæa*, and digs out for itself a cavity in the bark of the tree. As far as I can gather from Dr. Löw's description (Verh. des zoolog.-bot. Gesell., Wien, 1882), the hole thus burrowed out only extends "*to* the wood," and *does not* go deeper, although in his figure he seems to show it at least in the softer parts of the wood. This is a deep cavity, apparently smaller at its mouth than it is beneath, so that the insect is almost completely enclosed. Again, *Cœlostoma assimile*, a New Zealand species lately discovered, excavates for itself a deep cavity, sometimes in the axils, sometimes in other parts, of the twigs of *Fagus Menziesii*, and this cavity certainly, I think, extends frequently into the wood. Its mouth is covered with a thick waxy mass, and the insect is entirely enclosed. Again, the insect mentioned above as found in Australia on *Casuarina* combines the process of excavation with the formation of a special covering or shell; for, keeping the base of its cone always bare, and its rostrum applied to the wood, it covers itself with a horny, tubular test, and afterwards with (inside the tube) a waxy indusium, at the same time sinking deep under the bark, so that at last only the upper portion of the tube is seen to protrude.

It must be specially noted here that, in all these last three cases, the feet can have but very little to do with the excavation. *Ctenochiton viridis* and *Rhizococcus fossor* preserve their feet until the end of their lives, although not using them for locomotion after their earlier stages; but *Xylococcus filiferus* in its adult state is entirely apodal, and in its second stage has only very small, atrophied, feet. *Cœlostoma assimile* loses its feet immediately on quitting the larval stage; and so also, I think, does the new insect on *Casuarina*. Now, the larva of each of these may, and probably does, begin the burrowing process, but it certainly does not excavate anything like a cavity large enough for the subsequent stages. Clearly, therefore, the feet cannot, in these species, be used to mechanically enlarge the cavities.

It might be thought that, after all, the excavations are merely due to the increasing growth of the insect, which passively, as it were, prevents the growth of the plant from filling up its usual form. But this, I think, is scarcely the case; for the depressions and cavities are made not only in the young, soft, immature leaves or twigs, but also in the harder and older ones. Thus, for example, a larva of *Ctenochiton viridis* may settle on an old, thick leaf of *Coprosma* or *Panax*, and as it undergoes its metamorphoses and reaches the stage of gestation the depression in the leaf begins, grows and deepens. So also the burrows of *Cœlostoma* are to be found in old, as well as in young, twigs; and I have seen specimens of the *Casuarina* insect, certainly not adult, in branches more than an inch thick and quite old. I take it, therefore, that the action of the Coccid is not merely one of passive obstruction, but one of active excavation.

Dr. Löw, in his paper cited above, seems to have tried to make out something of the mode of proceeding of *Xylococcus filiferus*. But he was not successful; at least, he is only able to say that it worked "by a most peculiar kind of suction, and besides by a certain influence which these insects exercise on the plant growth." There is here nothing clear and definite, but I confess that I am unable to suggest anything more satisfactory. I have already observed that we have no knowledge of any acrid or acid fluid excreted by Coccids; nor can I see, in the species mentioned in this paper, any organs so different from those of other species, that they can be looked on as instruments for excavation. Professor Targioni-Tozzetti, in his admirable anatomical essay (Studii sulle Cocciniglie, 1867) does not appear to mention any organs likely to be so used; I think, indeed, that he does not discuss any of the burrowing species. My own studies of Coccids during the last sixteen years have not given me an insight into this matter; and I venture to ask the question which stands at the head of this paper in the hope that some entomologist may be kind enough to supply an answer.

Wellington, New Zealand:
June 16th, 1890.

NOTES ON THE *LEPIDOPTERA* OF DIGNE (BASSES ALPES).

BY A. H. JONES, F.E.S.

In company with Mr. Frederick Lemann, of Plymouth, and Mr. W. E. Nicholson, of Lewes, I spent three weeks in June at Digne. We arrived at Avignon on June 3rd, and before leaving for Digne, paid a visit to Nîmes, on the way stopping a few hours at Pont-du-Gard for the purpose of seeing the magnificent Roman Aqueduct. The road from the railway station to the Aqueduct, a distance of about a mile and a half, passed through uncultivated ground covered with a variety of Mediterranean plants, the *Cistus* (both pink and white) being very conspicuous. The French lavender (*Lavandula spica*) was plentiful, and doubtless attracted the numerous butterflies which frequented this lovely spot. *Melanargia Syllius* and *Epinephele Pasiphaë* were common; *Euchloë Belia* var. *Ausonia*, *Lycæna Baton* and *melanops* and *Pellonia calabraria*; the scene being enlivened by occasional specimens of *Gonepteryx Cleopatra* and *Euchloë euphenoides*. We were sorry to leave, we anticipated finding better if not quite as good collecting ground at Nîmes, but in this respect were somewhat disappointed.

After seeing the famous Amphitheatre at Nîmes, we visited the public gardens, noticing on the way evident traces of the larvæ of

Libythea celtis on the trees of *Celtis australis*, which were common in the town; *E. Pasiphaë* was common in the gardens, and we also noticed a specimen of *Vanessa Egea.*

It was afterwards a matter of regret that we did not devote more time to this interesting district instead of hurrying on to Digne, which place we reached on June 5th, much too late for the early species and too early for most of the summer ones.

The town of Digne presented a very dreary appearance, in consequence of the huge plane trees, which must have taken many years to grow, having been lopped level with the tops of the houses. This had been done, we were told, to get rid of the larvæ of a moth (probably *Liparis dispar*) which had been a source of annoyance last year to the inhabitants!

During the summer months Digne appears to enjoy a continuance of sunshine. In June the days, with scarcely an exception, were absolutely cloudless, though the temperature rarely exceeded 75°. This comparatively low temperature may in a measure be accounted for by the cooling influence of a breeze, which, as is the case in several localities on the Mediterranean coast, invariably springs up about mid-day. This breeze often proved very trying for collecting.

Donzel, in an interesting paper published at Lyons in 1851, gives a somewhat detailed account of the species of *Lepidoptera* occurring at Digne. He also mentions that the Department of the Basses Alpes comprises a little of almost all the climates of France, from the zone of the olive to the region of perpetual snow. Thus, from Digne at 2000 feet to Mont Pela, near Allos, at 8600 feet, you may, in 24 hours, follow the whole gradation of the vegetation of France. According to M. Honnorat, you can gather, without going out of the Department, 3500 species of plants, although, in the neighbourhood of Paris, within a radius of 20 leagues, you can scarcely come across 2000. This profusion of vegetable wealth explains naturally enough that of insects, and the blending of the Alpine plants with those of the Mediterranean also explains the cause of the varied insect fauna of the neighbourhood of Digne; as an illustration I may mention, that on the same hill sides we observed *Erebiæ*, *Parnassius Apollo*, *Thais Rumina* var. *Medesicaste*, *Limenitis Camilla*, and *Micra rosea*, &c.

The following species were observed:—

Papilio Podalirius, common, from June 4th; tails slightly longer than in the Swiss specimens. *P. Alexanor*, a fine series; the first specimen was taken on June 13th, and the species became gradually common towards the end of the month; it has a great partiality for resting on thistle blossom, when it is easily captured. Mr. Nicholson discovered about fifty eggs on *Seseli montanum*. The larvæ in England ate, though very reluctantly, the leaves of the garden carrot; only two reached the pupa state. The cold weather experienced in England during July and August affecting the larvæ no doubt very prejudicially, after the warmth of Digne. *P. Machaon*, much scarcer than the two preceding species; the form is lighter in colour than the typical European specimens, and the black markings, especially on the under-side, are much reduced in size. The larva was observed on *Ferula communis*, a large umbelliferous plant very common on the dry hill sides.

Thais Rumina, var. *Medesicaste*. Digne is probably the northern limit for this species, but the conditions seem very suitable, as it is certainly common. The 4th of June was very late, and only a few were obtained fine, though occasional specimens in fair condition were noticed quite late in June. Mr. Nicholson discovered the eggs and larvæ in great abundance on *Aristolochia pistolochia*, a plant which only grows on the sides of the mountains facing the south. The larvæ were in all stages, the young ones resting on the under-sides of the leaves and in the tubes of the curious flowers, the full fed larvæ lying concealed at the roots. The var. *Honoratii* occurs every season, but appears to be usually very scarce.

Parnassius Apollo, common, but local. A very fine form, the specimens being nearly half an inch broader in expanse of wing than the Swiss ones. *P. Mnemosyne*. Mr. Raine, of Hyères, whom we met at Digne, took this species in June.

Aporia cratægi, generally distributed, but not so common as in the Swiss valleys.

Pieris brassicæ, *rapæ*, *napi*, and *Daplidice*, occasionally.

Anthocharis Belia, a few worn. *A. Tagis*, var. *Bellezina*, two specimens, June 6th, flying on cultivated ground on the Dourbes. The larvæ of this species are said to feed on *Iberis pinnata*, a common cornfield weed near Digne, which would account for the species occurring in the locality mentioned. *A. cardamines*, rather common. *A. euphenoides*, a few at the beginning of June.

Leucophasia sinapis, fairly common. *L. Duponcheli*, not uncommon, but not quite fine, on the higher ground of the Dourbes, June 6th. This species occurs round Digne in May, and is common.

Colias Hyale and *Edusa*, *Gonepteryx rhamni* and *Cleopatra*, not uncommon.

According to Donzel, all the European *Thecla* occur at Digne. We observed six species, viz., *Thecla spini*, a long series among young oak from June 10th to 20th; the form is remarkably large. *T. ilicis*, var. *cerri*, quite as common as *spini*, and in the same localities; both this and preceding species fond of thyme blossoms. This is also a fine form, apparently the only one occurring at Digne; both ♂ and ♀ having the orange patch on the fore-wing very bright, in the ♀ spreading much over the wing. *T. betulæ*, larva on blackthorn. *T. roboris*, taken by Messrs. Lemann and Nicholson on July 2nd; this species had apparently been out some time, for it was then worn; it is rather partial to privet blossom. *T. quercûs*, on July 3rd. *T. rubi*, not uncommon.

Polyommatus Alciphron, var. *Gordius*, very common, frequenting thyme blossom. *P. Dorilis*, *Phlæas*, and var. *Eleus*, occasionally met with.

Lycæna argiades, var. *Coretas*, common, but worn, beginning of June; type not observed. *L. Ægon* and *Argus*, locally abundant. *L. Astrarche*, one or two specimens. *L. Icarus*, fairly common; var. *icarinus*, common. *L. Escheri*, locally abundant, from middle of June. *L. Bellargus*, rather common; var. *Ceronus*, this "blue" form of the ♀ appeared to be the prevailing one. *L. Hylas*, common, but local. *L. Corydon*, common, beginning of June, the pale south European form.

L. Meleager, common, taken by Messrs. Lemann and Nicholson beginning of July; a specimen of the dark form of the ♀, said by Donzel to be identical with the var. *Stevenii* of Hübner, was secured by Mr. Lemann. *L. Argiolus*, beginning of June. *L. Sebrus*, not uncommon, beginning of June, but getting worn; it was most abundant about three miles south of Digne, in the Bois du Rocher Coupé, a wood carpetted with various species of *Onobrychis* and *Astragalus*. *L. semiargus*, only met with occasionally on the elevated ground of the Dourbes. *L. minimus*, common. *L. Cyllarus*, a few, mostly worn. *L. Iolas*, one or two, worn; the young larvæ not uncommon on the pods of *Colutea arborescens*. *L. Arion*, not uncommon, a large and fine form.

Nemeobius Lucina, a few.

Libythea celtis, one specimen, taken on privet blossom, end of June.

Apatura Ilia, var. *Clytie*, one specimen.

Limenitis Camilla, common.

Vanessa Egea, *c-album*, *polychloros*, *urticæ*, *Antiopa*, *Atalanta*, and *cardui*, occasional specimens of each. The larvæ of *V. Egea* were noticed on Pellitory (*Parietaria officinalis*) on walls near Digne; larvæ of *V. cardui* and *Atalanta* also occurring on the same plant.

Melitæa Aurinia, var. *provincialis*, beginning of June, not uncommon, occurring in very dry places. *M. Didyma* and *Phœbe*, not uncommon. *M. Athalia*, a few, end of June. *M. Deione*, locally common, beginning of June.

The genus *Argynnis* was fairly represented in species, none of which, however, were abundant. *Argynnis Aglaia*, *Paphia*, *Adippe* and the var. *Cleodoxa*, *Lathonia*, *Euphrosyne*, *Selene*, *Dia*, and *Daphne*, the last named being the commonest, and frequenting bramble blossom.

Melanargia Galatea, abundant; the dark south European form approaching var. *Procida*. *M. Galatea*, var. *leucomelas*: in this interesting form the markings are entirely absent from the under-side of the hind-wings, which is quite white, the markings of the upper-surface showing faintly through; it appears to be an aberration of the ♀ only.

Erebia Evias, worn, beginning of June.

Satyrus Hermione, *Circe*, *Semele* and *Actæa* var. *Cordula*, a few of each.

Pararge Mæra, *Megæra*, and *Ægeria*, occasional specimens.

Epinephele Janira, not very common.

Cœnonympha Pamphilus, *Arcania*, and *Dorus*, common, end of June.

Spilothyrus alceæ, a few, beginning of June. *S. lavateræ*, common, throughout June.

Syrichthus carthami, not uncommon, among *Hippocrepis comosa*. *S. Sao*, very common.

Nisoniades Tages, common.

Hesperia Thaumas and *lineola*, not uncommon, end of June. *H. Actæon*, several specimens among lavender. *H. Sylvanus*, not common.

Among the moths we noticed *Arctia purpurata* and *fasciata*, *Zygæna Rhadamanthus* and *achilleæ*, *Syntomis Phegea*, common; *Trochilium culiciforme*, *Sesia bembeciformis*, *Emydia grammica*, common, flying on the hill sides in the day time; *Fidonia limbaria*, among broom; *Aplasta ononaria*, one fine. *Acidalia ornata*, not uncommon; *Micra rosea*, several; *Leucania vitellina*, one specimen; *Heliothis dipsacea* and *peltigera* and *Hylophila quercana*.

Shrublands, Eltham:
September 18*th*, 1890.

ENTOMOLOGICAL NOTES FROM ADEN AND COLOMBO.

BY J. J. WALKER, R.N., F.L.S.

We arrived at Aden at 8 a.m. on April 5th, and left at 6 p.m. on the 7th. A more wretchedly barren and unpromising place than Aden cannot be imagined, the peninsula (which rises to the height of 1776 feet) is nothing but a jumble of rugged, black volcanic hills, which seem as if they had only just cooled down from their original fiery condition, and only on close scrutiny can a few specks of green be observed, chiefly on the higher summits. Nevertheless, I landed at 1.45 p.m. on the 5th, and after walking about a mile, found a comparatively level spot of some considerable extent, supporting a fair amount of vegetation, consisting chiefly of bushes of *Mimosa*, *Cassia*, *Euphorbia*, *Calotropis* (*Asclepiadeæ*), and *Capparis*, with one or two which I did not know, besides a fair sprinkling of low plants, though not enough to cover the soil of volcanic ashes and fragments of lava; but I think that I am well within the mark in saying that at least fifty to sixty species of plants were represented on this spot. A good many species of *Coleoptera* (mostly small) were obtained by beating the bushes into my white umbrella, but this, unfortunately, soon collapsed, or I should, no doubt, have got many more; the Perim *Adesmia* was here in small numbers. The afternoon, though intensely hot (87°) was breezy, so that what butterflies there were about were not at all easy to secure. However, I secured *Junonia Œnone*, *Diadema Misippus*, ♀, some fine examples of the *Pieris* (? *Hellica*, L.) taken at Perim, and another species; a little slate-coloured *Thecla* was not rare about the *Mimosa* bushes, with one or two other *Lycænidæ*; and I saw one or two "skippers," which were too quick for me. My most interesting captures were in the genus *Teracolus*, of which I found four species, all except one in fair numbers, under the lee of the *Capparis* bushes, to which they seemed particularly attached. I could only identify one, *T. Dynamene*, Klug and Chr. Next day (6th) I went to the same place, and took very good series of the four species of *Teracolus*, besides adding specimens of *Lycæna bætica*, and a delicately coloured greenish-white *Callidryas* (? *C. florella*, L.), to my collection, and bringing the number of species of butterflies observed on this little plain (about thirty acres) to fourteen. I set out sixty butterflies in all, not bad for such a barren place as Aden. I could not get on shore at all on the 7th, as we were busy all day until we left, coaling ship, &c. Our voyage across the Indian Ocean was very monotonous, though the weather was very calm, and intensely hot;

we passed within sight of the large island of Sokótra on the 10th, but not near enough to obtain a satisfactory view: very little oceanic life observed, except flying-fish of small size, these, as well as all other living creatures, being much scarcer than in corresponding latitudes in the Pacific. I think we were all glad enough to reach Colombo on the morning of the 20th; at all events I can answer for myself. After the miserably barren places at which we had recently stopped, it was most refreshing to see so much magnificent tropical vegetation, in which the town is almost hidden; the cocoa-nut palm appears especially to thrive, the shore being lined with it as far as can be seen in both directions. The forenoon being fine and hot, quite a number of butterflies came off and flew about the ship, but they were very wild and difficult to approach: among them I recognised several specimens of the fine black and yellow *Ornithoptera Pompeius* (all ♂), but secured only one, in bad order; and also saw *Papilio Sarpedon, P. Pammon, P. Diphilus*, and *P. Polymnestor, Messaras Erymanthis*, &c. Landing at 1.30 p.m., I spent the afternoon in driving about the suburbs of the town with the doctor: we went out several miles, along well kept roads, with plenty of fine trees on either side, but not a single really wild place could I find, although I often got down and tried likely side paths, nothing but bungalows, gardens, native huts, and cinnamon plantations; the latter plant looks not unlike a rhododendron, minus the flowers, and the traditional fragrance of these groves is a myth, as it is not perceptible at all until the leaves or young shoots are bruised, when it is evident enough. I managed to fill my helmet with a miscellaneous assortment of insects, though the butterflies, especially *Papilio*, were as wild and shy as I have ever seen them: I secured five specimens of *P. dissimilis* and *P. Diphilus*, and saw *P. Hector* and one or two others; also took *Danais Chrysippus* and *D. Genutia, Acræa* sp., *Callidryas, Terias, Lycæna* (the European *L. Lysimon* being not uncommon in grassy places), &c. A little *Mycalesis*, with the outer half of the hind-wings white, was not rare, flitting about close to the ground in shady bushy spots, and was the only butterfly that was at all easy to take. Of *Coleoptera*, I could find at first only *Ateuchus* (nice species, punctured all over), *Gymnopleurus*, and *Onthophagus*, about stercore; but I subsequently came across a fallen tree, under the bark of which I found three fine species of *Histeridæ* (allied to *Platysoma* and *Abræus*), a fine thing near *Cucujus*, two species of *Brenthidæ* (small), various Staphs., &c. I noticed some promising-looking sheets of fresh water, covered with aquatic plants, but they were too much resorted to by the natives for bathing, washing clothes, &c., and I could find nothing on their margins, on a hasty examination. Next day (21st), we commenced coaling ship at 6 a.m., but I managed to get away for the day after 9, and, with a messmate, went for a trip by rail to a place called "Mount Lavinia," about eight miles to the southward of Colombo: while waiting for our train I managed to catch several useful butterflies, among them the common but beautiful red-spotted *Pieris Epicharis.* Except for the first mile, the line ran along the sea-beach, a very few yards above high-water mark, there being nothing inland except the eternal cocoa-nut groves. On our arrival at "Mount Lavinia," we first refreshed ourselves at the commodious hotel there (in the grounds of which I took *Messaras*, *Elymnias*, sp., and *Euplœa*, sp.), and then went off inland in search of a good collecting-ground, which, as yesterday, we failed to find, every good looking shady path leading sooner or later to a cluster of native huts, or to a cinnamon grove; the country about here must be very thickly inhabited. In the sunny roads butterflies were not scarce, though tremendously wild and active; we both had some exciting chases after fine *Papilios* (*Polymnestor*, &c.), but succeeded in catching only one *P. Agamemnon*, and one *P. Pammon*, the latter much worn and torn; there seemed to be no attractive flowers anywhere; we took a few *Callidryas*, some nice *Lycænidæ* (including many *Theclæ*), &c.; in the shady places a black and greenish-white *Danais* was not uncommon, but seldom in fine order. *Coleoptera* were scarce, but I took a *Cicindela*, very like one of the Gibraltar species (*sinuata*), in sandy places: I took also a huge *Helix*, nearly twice the size of *H. pomatia.*

We "crossed the line" (with the time-honoured ceremonies) in long. 91° 38′ E., on May 2nd, and after a very good passage from Colombo, entered the Straits of Sunda on the morning of the 6th, passing close to the famous volcanic island of Krakatoa, of which we had a very good view. The day being fine, the sight of the luxuriantly wooded coast of Java was very pleasing; it is certainly a very fine island. We anchored in Batavia roads the same evening, and this morning (7th) went into the artificial harbour of Tanjong Priok, seven miles east of Batavia, where we remain until the morning of the 9th, on which day we leave for Koepang (Timor). I am sorry that our stay here is to be so brief, as all our time will be taken up with coaling, &c., and I doubt if I shall even be able to get up to Batavia. The country here, although most luxuriantly vegetated, looks flat and swampy, and very suggestive of malaria; I had an hour or two on shore with my net to-day, and caught a few odd-and-end butterflies (*Pieris Hyparete*, &c.), but nothing out of the way. *Lycæna bætica* and *Deiopeia pulchella* seem very common.

H. M. S. "Penguin:"
May 3rd, 1890.

NOTES CONCERNING *PSOCUS QUADRIMACULATUS*, LATREILLE, OF WHICH *PS. SUBNEBULOSUS*, STEPH., IS A SYNONYM.

BY ROBERT McLACHLAN, F.R.S., &c.

In August, 1863, Mr. P. C. Wormald and I took a few examples of *Ps. quadrimaculatus* on an old lichen-covered paling at West End, Hampstead, near London, a locality now probably useless for entomological purposes. All the specimens I retained were ♀. Up to within the last few days, I had never again seen the insect alive in this country, nor do I know of recent captures of it by others. On the continent, with one or two exceptions, it is recorded as rare in recent local lists.

Near the end of the present month (September, 1890) I was staying at the charming little town of Dunster, in North Somerset. The hotel in which I lodged is a recent structure, only four years old, built of ironstone. On the outside wall I found *Ps. quadrimaculatus* in great abundance, chiefly on the lines of cement between the blocks of stone. In less than an hour I captured over 100, at the eye-line, in the space of two yards, and it would have been quite easy to have taken 1000 ; each successive day showed them in the same abundance. Why they were there remains a mystery ; possibly they were the descendants of others brought with the stone from the quarry. The wall being nearly new had no covering of lichens, algæ, or *débris* of any kind, save a few recent spider webs. An examination of adjacent walls, old and lichen-covered, failed to produce the insect.

This long series enables me to give some useful notes on the species. I arrive at the conclusion that most (or all) of the published descriptions of it have been drawn up from the ♀, which sex is little variable in the pronounced markings of the anterior-wings. But the ♂ is considerably variable. In the ♀ the oblique marking intersected by the fourth branch of the lower forked-vein (and opposite to the pterostigma) is as dark as the dark spot in the pterostigma. In the ♂ it is frequently absent altogether, and when present is very pale grey, like the more basal cloudings, and, in more extreme cases, these cloudings are also absent, the only markings being the dark pterostigmatical spot, and the dark points at the commencement of the pterostigma, and the end of the anal vein.

In my Monograph of the British *Psocidæ*, Ent. Mo. Mag., vol. iii (1867), I stated that it appeared doubtful if Coquebert's fig. 7, given as representing a variety of *quadrimaculatus*, had anything to do with that species. I now see in it a tolerably good representation of the ♂ in well-marked specimens.

Now, as to *Ps. subnebulosus*, Steph. In my Monograph I gave this as a distinct species. Upon studying my description of it, by the light of my new experience, it became doubtful to me whether it did not really apply to *quadrimaculatus*, and a re-examination of the single Stephensian type shows it is really a ♂ of that species (*maculipennis*, Steph., is the ♀). But the *subnebulosus* of Kolbe is not separable from *Ps. bifasciatus*, Latr., and has so been considered by him in later writings.

Confusion between *quadrimaculatus* and *bifasciatus* is not possible, on account of the smaller size and *polished* black thoracic lobes of the former, and the distinct type of neuration in the latter. Confusion with *Ps. bipunctatus*, L., is more easy, and I find that a Swiss specimen sent to me by Meyer-Dür as *bipunctatus* is really *quadrimaculatus*.

I have a ♂ insect taken by me some ten years ago near Geneva, which was submitted to Herr Kolbe, and was returned by him as "*Amphigerontia ægrota*, n. sp.," but no description was published of it. In this the anterior-wings want even the dark pterostigmatical spot, the space indicating the pterostigma being simply filled-in with pale grey (excepting at the base), and the only markings are the two dark points before alluded to. I now think this is only a condition of *quadrimaculatus*, of which species a ♀ was taken at the same place.

A few remarks on *Amphigerontia*, Kolbe, conclude these notes. In "Psyche," iii, p. 272, Dr. Hagen says the genus "cannot stand by the characters assigned to it." I think it cannot stand if made to include all the species placed in it by Kolbe, but it may, I think, do so if limited to *Ps. bifasciatus*, in which the transverse nervule joins the forked vein (*my* terminology) *beyond* the outer superior angle of the discoidal cell,* and not at, or before it, as is the case in the other species. In Kolbe's original definition of *Amphigerontia* ("Monogr. deutsch. Psociden," 1880) one point was that the discoidal cell is quadrangular, whereas in *Psocus* (as restricted by him) it is more or less pentagonal. Both conditions exist in nearly all the species of *Amphigerontia* (excepting *bifasciatus*) and in *Psocus*: in *Ps. quadrimaculatus* this variability is very marked. But in the "Anhang" to Rostock's "Netzflügler Deutschlands" (1888), Kolbe has very considerably modified the characters of both genera (still, however, retaining the same species as before), and uses a terminology for the neuration in *Psocidæ*, differing in many respects from that in his original work; moreover, some fresh points of neural structure are alluded to, which seem to me of scarcely generic value. I repeat that

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* Kolbe's fig. i (Monogr.) explains this structure very clearly.

Amphigerontia, if limited to *Ps. bifasciatus*, is probably a sound generic division. I have purposely refrained from re-opening the question of the homologies of neuration in the family.

Lewisham, London:
September 30th, 1890.

ACULEATE *HYMENOPTERA* COLLECTED BY J. J. WALKER, ESQ., R.N., F.L.S., AT GIBRALTAR AND IN NORTH AFRICA.

(PART II—*MUTILLIDÆ, SCOLIIDÆ*, AND *SAPYGIDÆ*.)

BY EDWARD SAUNDERS, F.L.S.

Family MUTILLIDÆ.

MUTILLA.

capitata, Luc.—one ♂, four ♀, Gibraltar.

distincta, Lep.—two ♀, Gibraltar.

littoralis, Petagn., var.?—one ♀, Gibraltar. This ♀ is smaller than ordinary *littoralis*, and has the thorax of a dark brownish-red, but I can see no structural character to distinguish it from that species.

hottentota, Fabr., three ♂, ♀ abundant, Gibraltar. All the specimens belong to the variety *tabida*, Luc.

montana, Panz.—four ♀, Gibraltar.

rufipes, Latr.—ten ♀, Gibraltar.

subcomata, Wesm.—♀, abundant, Gibraltar. Very distinct from *rufipes* in the sculpture of the pygidium.

Spinolæ, Lep.—two ♀, Gibraltar and Tangier. The specimen from Tangier has the teeth of the petiole unusually developed.

stridula, Rossi.—♀, a few from Gibraltar.

var. *tunensis*, Fab.—three ♂, Gibraltar; one ♀, Tangier.

regalis, Fabr.—one ♀, Gibraltar.

Chiesi, Spin.—three ♀, Gibraltar.

halensis, Fabr.—one ♂?, Tangier, numerous ♀, Gibraltar. The apterous ♂, which Mr. Walker found at Tangier, I think is probably referable to this species, no male has hitherto been suggested for it, and there is a great resemblance between this and the females. The following is its description:—

Head black, shining, clothed with scattered bristly black hairs, very coarsely punctured; mandibles bidentate at the apex, more or less testaceous in the middle, at the base of each antenna a small rounded tubercle; antennæ piceous, 2nd joint paler than the rest; thorax red, strongly rugose, clothed with rather long bristly black hairs; posterior margin of prothorax deeply and rather narrowly emarginate, but with the emargination rounded at its apex; tegulæ smooth and shining; between the meso- and metathorax there is a deep constriction, and the metathorax is widely rounded posteriorly, and slightly raised; abdomen black, clothed with black bristly hairs, the 2nd segment bearing two round spots of golden hairs, placed side by side, as in the ♀, the 3rd and 4th segments are entirely clothed with golden hairs, the extreme apex of the 7th segment testaceous; legs clothed with pale hairs, tarsi piceous. Length, 5½ mm.

4-punctata, Oliv.—♀, six specimens, Gibraltar.

partita, Klug.—♀, seven specimens, Gibraltar, and one from Tetuan, Marocco; this latter having the thorax black, and clothed with silvery-gold hairs; this variety holds to *partita* much the same relationship that the var. *tunensis* of *stridula* holds to its type.

4-maculata, Luc.—one ♀, Tetuan, Marocco.

arenaria, Fab.—three ♂, six ♀, Gibraltar; the females varying greatly in size, from about 6 mm. to 12 mm., but none attaining to the large size of those from Eastern Europe.

maroccana, Oliv.—one ♀, Gibraltar.

brutia, Petagn.—one ♂, seven ♀, Gibraltar, and two ♀, Tetuan, Marocco; the females varying considerably in size.

lugubris, Fab.—♂, two, Gibraltar.

Ghilianii, Spin.—♂, one, Gibraltar.

græca, Lep.—♂, five, Gibraltar and Benzus Bay, Marocco; with thess Mr. Walker has sent several entirely black males, which appear to me to differ from *græca* only in colour; the genital armature appears to be alike in both; I sent a specimen to General Radoszkowsky, who has kindly helped me with some of my difficulties in this genus, and he rather inclined to think that it was distinct from *græca*. I, however, refrain from describing it at present, and simply note it as *græca*, var. *nigra*.

hispanica, Rad.—one ♂, Gibraltar.

ciliata, Fabr.—three ♂, Gibraltar.

n. sp. ?—♂, one, Gibraltar. This male appears to me to be undescribed, but for a single specimen I hardly like to propose a new name; its characters are as follows: Head black, shining, strongly punctured, and clothed with long pale hairs; eyes sinuate; antennæ pitchy-black; prothorax and mesothorax black; tegulæ pitchy; scutellum and metathorax red; prothorax with its posterior margin widely emarginate; the apex of the emargination obtusely angulated; mesothorax shining, deeply punctured, with two impressed longitudinal lines, and clothed with a few scattered pale hairs; metathorax rounded, sub-rugose, centre with an impressed line; abdomen black, shining, largely punctured; the 2nd and following segments with an apical fringe of long pale hairs; Legs black. Allied to *rufipes*, Fabr.

Length, 6 mm.

MYRMOSA, Latr.

ephippium, Rossi.—two ♂, three ♀, Gibraltar, Tangier, and Benzus Bay, Marocco. Jurine, in his "Nouvelle Méthode," gives a good figure of the male of this species on pl. ix, fig. 14.

obscuripes, Tourn.—one ♂, two ♀, Tangier. Tournier, Ent. Genév., 2d Liv., p. 35, only describes the ♀ of this species, but I have little doubt that the above ♂ is its partner; it is closely allied to *ephippium*, Rossi, but is smaller and narrower, and has the head and thorax clothed with scattered long black hairs; the thorax is distinctly narrower in proportion to its length, and the scutellum is red, like the *pro-* and mesothorax; the abdomen also is more shining, and clothed with longer black hairs.

Myzine, Latr.

sexfasciata, Rossi.—♂, plentiful, Gibraltar; one from Tetuan; and two ♀, Gibraltar.

thoracica, Guer.—two ♀, Gibraltar.

var., with prothorax black.

erythrura, Costa.—four ♂, Gibraltar.

Family SCOLIIDÆ.

Scolia, Fabr.

flavifrons, Fabr.—two ♂, one ♀, Gibraltar.

bidens, Linn.—♂ ♀, Gibraltar.

erythrocephala, Fabr.—several ♂ and ♀, Gibraltar.

interstincta, Klug.—several ♂ and ♀, Gibraltar.

unifasciata, Cyrill.—♂ ♀, Gibraltar.

var., *fasciâ interruptâ*.

hirta, Schrank.—three ♂, three ♀, Gibraltar, Tangier, and Tetuan, Marocco.

Elis, Fab.

villosa, Fab.—Several ♂ and ♀, Gibraltar. The females are all of the variety with the abdomen quite black, and the majority of them have *three submargina* cells, whereas it is a curious character in this species, as described by Saussure, that although the ♂ has three, the ♀ has only two submarginals; in my specimens, three have the three submarginals complete in both wings, three have the nerve between the 2nd and 3rd abbreviated above in the right hand wing, one has it interrupted near the middle in the left wing, and one has it abbreviated above in both.

Saussure and Sichel, Cat. Spec. Gen. Scolia, p. 292, say that they have seen a large number of specimens of both sexes taken near Montpellier, and at p. 294, they remark that of the specimens in their collection, four males have the three cubital cells complete, five males have only two complete, ten males have two cubital cells in one wing and three in the other, and of thirty-six females all have the three cubitals complete. It is very curious that in Mr. Walker's captures the twelve males have all the cubital cells, viz., three, complete, whereas the variations occur in the females.

collaris. Fabr.—four ♂, Gibraltar; ♂ ♀, Cap Negro, near Tetuan. The Tetuan ♂ having the abdomen quite black.

ciliata, Fabr.—one ♂, two ♀, Gibraltar.

Tiphia, Fabr.

Olcesei, Tourn.—one ♂, Gibraltar.

morio, Fabr.—one ♂, Gibraltar.

minuta, V. d. L.—one ♂, Gibraltar.

Family SAPYGIDÆ.

Sapyga, Latr.

5-*punctata*, Fabr.—two ♂, Gibraltar.

St. Ann's, Woking:
September 12*th*, 1890.

ON A NEW GENUS OF *ANTHICIDÆ* FROM TROPICAL SOUTH AMERICA.

BY G. C. CHAMPION, F.Z.S.

In dealing with the rather numerous Central American representatives of the genus *Tomoderus* (Biol. Centr.-Am., Col., iv, pt. 2, p. 215), I briefly noticed an allied form from Colombia, and stated my opinion that it was probably generically distinct; but as this insect did not belong to the fauna then under investigation, I did not examine it very critically. Since these remarks were written I have seen, in the collection of M. René Oberthür, additional examples of the Colombian insect, and also of a second species from Venezuela; and I now propose to separate these from *Tomoderus* under the name *Holcopyge*.

HOLCOPYGE, *gen. nov.*

Head, antennæ, palpi, prothorax, and legs as in *Tomoderus*; the elytra ovate, greatly inflated, very convex, somewhat compressed and obliquely converging at the sides behind, the sutural angles sharp, the humeri completely effaced; the mesosternum very narrowly raised between the intermediate coxæ; the metasternum exceedingly short (the middle and hind coxæ being separated by a very narrow space); the intercoxal process of the abdomen broader than in *Tomoderus*; the 1st ventral segment in the middle nearly as long as segments 2—4 united; the terminal dorsal segment (or pygidium) with a very sharply defined, deep, longitudinal furrow extending down the middle from the base to the apex; body apterous.

Owing to the very convex, ovate elytra, *Holcopyge* bears a great resemblance to certain *Scydmænidæ*, more especially to the eastern genus *Clidicus*, Cast. The form of the terminal dorsal segment is very peculiar, the groove being evidently for the purpose of effectually closing the elytra at the apex, the inturned sutural margins just fitting into the groove. The terminal dorsal segment or pygidium is long, smooth, and highly corneous, and when the elytra are closed it is withdrawn beneath them. The elytra have a greatly inflated or gibbous appearance, and are raised above the level of the prothorax.

The two species are closely allied, one being from Venezuela and the other from Colombia. I am indebted to M. René Oberthür for an example of each of them.

HOLCOPYGE PALLIDICORNIS, *sp. n.*

Moderately elongate, broad, of a bright castaneous or reddish-castaneous colour, very shining, the upper surface somewhat thickly clothed with very long, erect, yellowish hairs. Head broad, a little rounded at the sides behind, subtruncate at the base, with a few minute widely scattered punctures; the eyes black, moderately large, coarsely granulated, not prominent; antennæ testaceous, long, rather slender,

joints 3—8 gradually decreasing in length, longer than broad, 9 as broad as long, 10 transverse, 11 fully twice as long as 10, acuminate; prothorax as long as broad, the anterior portion as wide as the head, the posterior portion narrower, the anterior portion with traces of a fine impressed median line behind (only visible in certain lights), the surface with a few minute widely scattered punctures; elytra regularly ovate, in the broadest part about two and a half times as wide as the prothorax, with irregular rows of coarse, somewhat distinctly placed punctures, the punctures becoming very much finer beyond the middle; beneath ferruginous, the last ventral segment flavous, the ventral segments somewhat coarsely and rather thickly punctured, the punctuation becoming a little finer towards the apex; legs flavo-testaceous; the 5th ventral segment broadly truncate at the apex and unimpressed, and the anterior tibiæ with a short triangular tooth on the inner side about the middle, in the male. Length 3, breadth, 1¼ mm.

Hab.: COLOMBIA.

One example in Mr. F. Bates's collection, and two others in that of M. René Oberthür, the latter labelled with the misleading general locality "Bogota" (Petersen).

Mr. Bates's specimen is ticketed with a printed label (apparently cut out from a price list), *Tomoderus pallidicornis*, Schauf.; but this name, so far as I am aware, is an unpublished one. The description is taken from two male examples; the third specimen is not at hand for examination. The pubescence is easily abraded, and in one example it is almost entirely rubbed off. The antennæ extend to far beyond the base of the elytra. *Tomoderus excavatus* and *T. canaliculatus*, Ch., from Central America, are of about the same size as *H. pallidicornis*; but they have the terminal dorsal segment ungrooved, the elytral humeri well marked, the body winged, &c., and, in short, possess all the structural characters of *Tomoderus* as defined by La Ferté, Lacordaire, and other authors.

HOLCOPYGE MERIDIONALIS.

Closely allied to, but much smaller than, *H. pallidicornis*, from which it differs as follows:—The antennæ shorter and very much stouter, joints 8 and 9 as broad as long, 10 transverse, 11 twice as long as 10, acuminate; the anterior portion of the prothorax very distinctly and rather deeply canaliculate; the 5th ventral segment with a large, shallow, triangular depression in the middle in the male, the anterior tibiæ merely a little thickened in this sex, and without trace of a median triangular tooth. Length 2¼, breadth, 1 mm.

Hab.: VENEZUELA, Caracas.

Two examples of this species were captured by Dr. O. Thième at Caracas in May or June, 1877. The description is taken from a male specimen, and there is a second in M. Oberthür's collection.

11, Caldervale Road, Clapham:
October 1890.

Xylophilus oculatus, Gyll., and X. pygmæus, De G.—In my brief remarks on *X. oculatus*, Gyll. (= *pygmæus*, Muls.), and *X. pygmæus*, De Geer, *ante* p. 266, I have stated that the latter only of these is known as British. This is a mistake, and the word "latter" should be altered to "former." A good deal of confusion exists in regard to these two insects: in Dr. Sharp's Catalogue of British Coleoptera, 2nd edition, the species is called *X. pygmæus*, De G.; in that of Messrs. Fowler and Matthews, *X. oculatus*, Gyll. (= *pygmæus*, Muls.). The male of *X. pygmæus*, De Geer, differs from the corresponding sex of *X. oculatus*, Gyll., in its larger size and longer and much more strongly serrate antennæ, the apical joint of which is not more than one-third longer than the 10th (in *X. oculatus* it is nearly twice as long as the 10th). The females scarcely differ, except in size; the apical joint of the antennæ is, however, relatively shorter in *X. pygmæus*, De Geer (not equalling joints 9 and 10 united). The differential characters between the two species are clearly given by Abeille, Bull. Soc. Ent. Fr., pp. ccxxiv and ccxxv; and also by Thomson, Skand. Col., vi, p. 371. I have seen no example of the male agreeing with Westwood's figure of *Euglenes oculatus*, which is taken from a British example (Zool. Journ., Suppl. plates, 2nd part, t. 41, fig. 5): this represents the apical joint of the antennæ short as in *X. pygmæus*, De G., and joints 4—10 very feebly serrate, as in *X. oculatus*, Gyll.; but as the tarsi are incorrectly drawn in this figure, it is possible that the antennæ are incorrect also. Westwood, moreover (*op. cit.* v, p. 60), distinctly says of the male antenna—"articulo ultimo elongato subcylindrico, apice oblique truncato;" and this agrees with *X. oculatus*. Most of my British examples are from the London district or Sherwood Forest, and they have a very elongate apical joint to the antennæ in the male. Two female specimens captured by Mr. J. J. Walker in Cobham Park are considerably larger than the other females I possess, but are apparently not separable from them; unfortunately, Mr. Walker did not obtain a male. I fully anticipate that *X. pygmæus*, De G., will be found to inhabit this country.—G. C. CHAMPION, 11, Caldervale Road, Clapham, S.W.: *October 2nd*, 1890.

Note on the Japanese Scraptiæ described by Marseul.—During a recent study of Marseul's collection of *Heteromera* in the Paris Museum, I had occasion to examine the three Japanese *Scraptiæ* described by him in the Ann. Soc. Ent. Fr., 1876, pp. 456, 457. Two of these, *S. brunnea* and *S. dimidiata*, Mars., I immediately recognised as belonging to *Microtonus*, Lec., a genus appertaining to a different group of the Heteromerous series. Marseul's description of the head alone of these two species (additional examples of which have been communicated by Mr. G. Lewis), "Tête enfoncée dans le prothorax jusqu'aux yeux," conclusively proves that they have no connection with the Scraptiides. In *Microtonus* the head, instead of being constricted behind into a narrow neck as in *Scraptia*, is broad at the base and deeply sunk into the prothorax, the last joint of the labial palpi, the antennæ, and the prothorax are differently shaped, &c. *Microtonus* has hitherto contained one species from the United States and six from Mexico or Guatemala; the former, *M. sericans*, Lec., is closely allied to Marseul's *S. brunnea*. Leconte and Horn, Class. Col. N. Am., p. 404, refer *Microtonus* to the *Œdemeridæ*; it would, perhaps, be better placed in the *Melandryidæ*, immediately after *Symphora*, Lec., to which it is very closely allied. This is another instance of affinity between the Coleopterous fauna of Japan and that of North or Central America, a possible affinity apparently not entering the minds of the many European authors.—Id.

Additions to the Irish list of Coleoptera.—The following have not, as far as I can ascertain, been previously recorded as occurring in Ireland. *Rhizophagus parallelocollis*, one specimen, in my schoolroom: as this is close to the Cathedral graveyard, the beetle probably flew from thence. *Quedius auricomus*, one specimen, in moss from a little stream in the Palace Demesne; in the same locality I took *Baptolinus alternans*, and with it an *Atomaria*, which I believe to be *fuscipes*. In the little river that runs through the Folly, a kind of public park, I captured *Dianous cœrulescens* and *Hydræna atricapilla*; I give this last with some reserve, as it is an uncommon species, and I have not a type to go by. *Anchomenus angusticollis*, F. (*junceus*, Scop.), *Choleva nigrita*, *Saprinus rugifrons*, *Geotrupes pyrenæus*, and *Byturus tomentosus*, complete the list. These last five species I received from the Rev. S. A. Brenan, who took them in the neighbourhood of Cushendun, Co. Antrim, except the last, which was captured at Cullybacky, Co. Antrim. I am sorry to say he only took one *Geotrupes pyrenæus*, and I have not heard of others turning up. *Choleva nigrita* was taken from a dead hedgehog, in company with *Necrophorus humator*. The season has not been a good one for *Coleoptera*, and I have missed several of my usual captures, notably, *Erirhinus æthiops*, of which I have taken only one specimen during the whole year, and that was on Saturday last, in some moss from Lowry's Lough, a locality in which I had not previously met with it, though I suspected its presence, and looked for it. I think it must have some connection with *Sparganium ramosum* or *Equisetum*, as it is where these grow that I always find it.—W. F. Johnson, Winder Terrace, Armagh: *October 6th*, 1890.

Telmatophilus sparganii, Heer, &c., in the Hastings district.—Among some beetles sent to me for determination by Mr. A. Ford, of Hastings, I found the following, one or two of which are quite new to the district, and are very interesting captures: *Telmatophilus sparganii*, Pett Marshes; *Anisotoma grandis*, Maplehurst Wood; *Bledius crassicollis*, Camber; *Abdera bifasciata*, Guestling; *Bagous cylindrus*, Pett Marshes; the latter species has hitherto been only recorded from Notting Hill and Hammersmith Marshes, Gravesend, Lee, Sheppy, and Whitstable; Dr. Power and Mr. S. Stevens used to take the insect commonly in the two former localities, which are now destroyed; *Trachyphlæus myrmecophilus* appears to occur in many places in the Hastings district, being often found quite close to the sea.—W. W. Fowler, Lincoln: *October 15th*, 1890.

Lucanus cervus.—Occasionally, of an evening during July just past, I have seen a male stag-beetle fly along the road past this house, showing that the species is not yet extinct in this locality, as might have been expected by the constantly increasing number of houses and the relative decrease of trees on the solid wood of which the larva feeds. Fifteen years ago, at Lee, these insects were not rare, flying in the evening, and frequently, in the garden, I have intercepted the heavy flight of a male with my hand. There he would sit in a menacing attitude—his wings closed, his front legs stretched out, the acute claws tightly grasping my finger, his head raised up, his large mandibles widely open, and his antennæ extended—the whole figure representing exasperated majesty, indignantly enquiring why this affront had come between the wind and his nobility. But after a while, as if assured that no offence or harm was intended, he would calm down, assume a gentle demeanour, and fly away.—J. W. DOUGLAS, Lewisham: *August*, 1890.

Captures of rare Hemiptera and Coleoptera in 1890.—The following is a list of some scarce insects met with by me during the past summer, with the localities in which they occurred. *Stictocoris Preyssleri*, H.-S., at Brickett Wood, Herts, on *Genista anglica*; at Tring Hills, Herts; Cisbury Hill, Sussex, and Arundel Park, Sussex, on common burnet. *Platymetopius undatus*, De G., at Brickett Wood, Herts, on oak; two specimens. *Asciodema Fieberi*, at Bovingdon, Herts, on wych elm; abundant. *Limotettix variata*, at Bovingdon, Herts; one specimen. *Macrocoleus hortulanus*, Tring Hills, on *Helianthemum*; one specimen. *Doratura stylata*, macropterous form, Tring Hills; one specimen. *Ceuthorhynchidius frontalis*, Arundel Park; one specimen. *Hypera fasciculata*, at Deal sandhills, under *Erodium*; six specimens.—A. PIFFARD, Felden, Boxmoor, Herts: *October*, 1890.

Capture of Nabis (*Stålia*) *boops*, *Schiödte*.—While collecting towards the end of August on a heathy place near Gomshall, Surrey, I took a couple of specimens of a brachypterous *Nabis* that I did not know. Mr. E. Saunders has kindly identified them for me as *Nabis* (*Stålia*) *boops*, Schiödte, a species which was introduced into the British list by Mr. Jas. Edwards, and of which there is, I believe, no other record as British. My specimens were ♂ and ♀, and were taken under heath. In coloration they approach *N. major*, Costa, but are rather smaller.—E. A. BUTLER, 39, Ashley Road, Crouch Hill, N.: *October*, 1890.

Notes on the habits of Verlusia rhombea, Lin.—In a sand-pit near Gomshall I found a nymph of the above species, which I brought home with the hope of rearing the imago. As it seemed scarcely full grown, I kept it supplied with the leaves of various kinds of common cottage-garden plants. I had no proof that it touched any of these, except the mignonette, the juices of which I found it on one occasion intently sucking. It remained in captivity for about a fortnight before it made its final moult, and became a rather thin and weakly imago, and I never saw it take any food save on the above occasion. One use of the enormously developed antennæ I had abundant opportunities of noticing. The breadth and thinness of the body are obviously difficulties in the way of the insect's righting itself when capsized, and it is then that the antennæ come to the rescue. Pressing their tips against the ground, it supports itself, tripod-like, on them and the end of its abdomen, and then by suitable movements of the antennal props, aided by struggles with the legs, rebalances itself and resumes its normal position. It had also the curious habit of occasionally raising its body from the depressed position in which it is usually carried, and swaying it from side to side while thus slung up, as it were, between the three pairs of legs. I could discover no reason for this peculiar movement.—ID.

Cryptococcus fagi.—The two beech trees in which I found this species (*cf.* Ent. Mo. Mag., *ante* p. 155, and vol. xxiii, p. 153), whose stunted condition shows that the dry, gravelly soil of Blackheath does not agree with their constitution, at the present time have their dark trunks conspicuously covered with small white tufts of cottony matter manufactured by the insects and exuded through the bark. "The life and labours of colonies of *Cryptococcus fagi*, with autographic illustrations," might be the title of the work now published for general perusal.—J. W. DOUGLAS, 153, Lewisham Road, S.E.: *August* 13*th*, 1890.

Chionaspis salicis?—On the same trees affected by the moths, on smooth places of the bark, were many of the whitish scales of the females of a *Chionaspis* and a few of the clear white carinate scales of the males. No species of *Chionaspis* has been recorded as attached to lime trees, and I should not like to say that these scales were those of *C. salicis* (which lives on sallow and ash), although they looked like them. But the question of identity could only be decided by microscopical investigation, and to make this I must have sliced off a piece of the bark with the adherent scales; but I was not very anxious to do this, as the male scales were broken and useless. And I was also deterred by the too curious observation and enquiries of the numerous onlookers, who could not imagine why an old fellow with spectacles on nose could be peering so intently at the trunks of trees on which they could see nothing; and, moreover, there was the proximate chance of having an argument with a policeman about wilful damage. So I have left the identification to a more convenient season, or to some one who may find the scales in a locality where he will not have to risk an appearance before Justice Shallow.—ID.

Psallus ambiguus, Fall., flying at night.—On the evening of June 27th last a female of this species flew in at the open window to the lighted lamp, and soon paid the penalty of its rashness in seeking light. It was new to my experience that any species of *Psallus* flew at night, though I might have expected it, for I have always obtained them only by beating trees or bushes in daylight, and then they made frantic endeavours to escape and return to the obscurity of the foliage from which they had been disturbed.—ID.

Disappearance of Pararge Ægeria.—Twenty years ago this butterfly was common in most woods round Ramsbury and Marlborough; any one entering the wood at the proper season would at once see half-a-dozen specimens flitting along the drives. It appeared to become gradually scarcer, and now seems to be extinct. During the four years that have elapsed since my return to England, neither I nor any of the numerous active collectors at Marlborough College have seen a single specimen. The woods are quite unchanged in character, and I can suggest no explanation. Collectors are not responsible, for some woods are never visited except by myself. In Cornwall, last September, I noticed the species was very plentiful, frequenting the roadsides everywhere.—E. MEYRICK, Ramsbury, Wilts: *September*, 1890.

The food-plants of Eulepia cribrum.—Referring to the interesting notes on this insect, pp. 255 and 256, I have reared it from Swiss larvæ. In June, 1883, I found the larvæ at Orsières, in the Dranse Valley, on a broadish leafed grass. There was no heath in the vicinity, and I continued to feed it on any grass at hand, and reared the perfect insect towards the end of July, the form that emerged being var. *punctigera.* My impression is that it will take any kind of grass, as it was by no means particular in this case.—G. T. Baker, 16, Clarendon Road, Edgbaston: *October 6th*, 1890.

The food plants of Eulepia cribrum.—In reply to the Rev. E. N. Bloomfield's query (p. 255, *ante*) as to the food of this species, I should say, from my experience, that the larvæ feed on one, or both, of the two commonest species of *Erica*—*E. cinerea* and *E. tetralix*,—and not on *Calluna vulgaris.* On July 27th, 1872, I first met with *Eulepia cribrum* in one of the localities in which it then occurred, between Ringwood and Wimborne. Out of some three dozen specimens captured by me, nine or ten were females, from which a number of ova were obtained. These produced larvæ in due course, which fed up rapidly on *Erica cinerea* and *E. tetralix.* On my return to Brighton, where I was then living, about the middle of August, it was impossible to obtain either species of *Erica* within a reasonable distance of the town, and the larvæ were accordingly supplied with *Calluna vulgaris*, which occurs on such portions of the Brighton downs as have escaped cultivation. The larvæ did not "take kindly" to their change of food, and by the end of September they had all died. If the larvæ of this species ever feed on grasses, it seems probable that one or more of such heath-growing species as *Aira flexuosa*, *A. caryophillea*, *Molinia cærulea*, *Triodia decumbens*, or some species of *Festuca*, would be more likely to be the food plant than *Poa annua*, which, although the commonest of road-side and meadow grasses, and the prevailing "weed" of gardens, does not, in my experience, occur on the poor heaths frequented by *E. cribrum.*—H. Goss, Surbiton Hill: *October*, 1890.

Nepticula larvæ in osier near Weymouth.—Mr. Hodgkinson's note in the "Entomologist" for the present month (Ent., xxiii, 324), viz., the breeding of "*Nepticula salicis* from the silver-leaved osier, the larva feeding nearly at the tip, quite in a different way from the usual well-known *salicis* mine," leads me to record the fact that I found, on October 12th, 1889, larvæ of a *Nepticula* in the leaves of an osier (I think, *Salix alba*, var.).

The larva, whilst young, is of a bright orange colour, and makes a narrow serpentine mine. It then becomes yellow, with a brown head, and the mine widens out into a large blotch of irregular form, which sometimes includes the whole or part of the narrow mine.

The mine is occasionally at the tip of the leaf, but not invariably so, being sometimes half-way down, or near the base. The cocoon is dull brown in colour. The larvæ were much ichneumoned, as though I had, perhaps, a dozen or more cocoons, I bred only one imago (on May 7th), which certainly appears to be *salicis*, *the larvæ of* which species are common on sallows in the neighbourhood.

I hope that either Mr. Hodgkinson or I may be able to throw some light on this problem next year, but the sallow and willow larvæ certainly appear to be very distinct.—NELSON M. RICHARDSON, Montevideo, near Weymouth: *Oct.* 16*th*, 1890.

Notes on Eupœcilia notulana and Halonota cirsiana.—Last autumn, I collected from a small damp spot in this county some stems of mint (*Mentha hirsuta*), containing larvæ of *Eupœcilia notulana*, from which I bred a nice series last June.

I find that this species varies considerably in its markings, especially as regards the dark central fascia. This fascia, which is, as a rule, of a rich dark velvety-brown, almost black, or with black edges, and presents a striking contrast to the cream coloured ground of the wing, is occasionally almost as light as the ground colour, with one or two small dark dots at the edges. Sometimes only the lower half is of the rich dark colour, and I have also specimens in which the fascia is very dark and broad, and the usual small dark spot on the inner margin near the anal angle is enlarged into a band, and meets the central fascia near the middle, causing the whole dark marking to take the form of an inverted Y. In one case, the triangular part of the Y is completely dark. The fascia near the apex varies quite as much in the intensity of its colour, which seems to be entirely independent of that of the central fascia.

The larvæ hibernate and pupate in the stems, and emerge through a small hole in the side hidden by a thin layer of bark, which is all that is left by the larva at that point.

My chief object in referring to this species is to ask whether any one has actually bred *E. notulana* from any other plant besides mint, especially *Inula dysenterica*. I have somewhere seen a statement that its larva feeds on *Inula*, and I, therefore, carefully examined a great many stems of that plant, which were growing amongst the mint, but could not find one containing a larva of *E. notulana*, though many of the mint stems contained three or four each, and in the very restricted locality in which it occurred, the larva was decidedly common. I quite satisfied myself that there, at all events, *E. notulana* did not use the *Inula* as a regular food-plant.

In my examination of the *Inula*, I found occasionally, perhaps in every twentieth stem or so, a larva which I supposed at the time to be that of *C. inopiana*. This larva, of which I regret to say I took no description, was feeding quite at the bottom of the old flower-stalk, and sometimes almost in the root of the plant. I kept the stems out of doors, planted in a flower-pot, until the late spring, when I found that the larvæ had pupated in the stems. These I brought indoors, after cutting them, for convenience, to a length of six or eight inches, and placed them on the bottom of a box. The pupa, a day or two before emergence, wriggled up the inside of the stem and came out at the top where it was cut off. The same thing happened when I placed the stem in a nearly upright position.

The moths emerged at the end of June and beginning of July, and turned out to be *Halonota cirsiana*.

I hope next year to discover what happens to the pupa when the top of the stem is left on.

I may add that the imago of *E. notulana* appears to be of very retiring habits. I have worked for it at various times of the day, and once or twice at night; but the whole of my captures amount only to one worn specimen sitting on a stem.—Id.: *September* 15*th*, 1890.

Deilephila galii in Lancashire and Cheshire.—In conversation with the Liverpool entomologists, Messrs. Capper, Gregson, Pierce, Harker and others, I have heard a good deal about the abnormal abundance of larvæ of *Deilephila galii* in the year 1888, and certainly far more than has been recorded. It is difficult to arrive at an estimate of the actual numbers that were taken, but it is asserted (and confirmed) that one young collector was *seen* to have a cigar box *full* of these larvæ. Of course he did not rear them all, or indeed I think *any* of them, for these delicate larvæ would be quite unable to recover from the effects of the sweating and suffocation induced by such treatment. But those entomologists who were more humane in their collecting, and more modest in their desires, reaped a very fair reward, and many scores (possibly a few hundreds) of the beautiful moth were reared. The larvæ seem to feed principally at night. In the earlier part of the day and in cool weather they hide themselves among their food-plant, or in the great tufts of marram-grass, but on hot sunny afternoons they creep out and sun themselves, especially loving to lie upon the hot bare sand, and revelling in the most intense heat of the sun. Heat appears to be a necessity for them. As soon as the weather became chilly, those which had not gone down became languid, and if exposed, soon died, indeed, some larvæ which were, as an experiment, exposed to a rather frosty night, were found dead in the morning.

It is very possible that we have in this the secret of the scarcity of the species in this country, where its food is so abundant. I am assured that in the extensive sweeps of sandy coast from Llandudno, North Wales, to Grange, in the north of Lancashire, and even further, *galii* is to be found in the larva state, somewhere, *every* year. The food-plant is plentiful to within a short distance of high water mark, and from the protection of the inland hills and the immediate influence of the Gulf stream, all this coast enjoys an exceedingly mild climate, while the sand suits the larva for assuming the pupa state. If, then, this species is constantly resident here—and I saw specimens in Mr. Gregson's possession which he assured me were reared from larvæ found in 1889—it is quite in accordance with what we know of insect life, that in a specially favourable season the species should become comparatively common.

I have hitherto been disposed to attribute the abundance of this species in 1888 to immigration; but one's opinions should only be founded on facts, and must, of course, be modified by them. When I heard, in 1888, that these larvæ were being found quite freely near Dover and near Liverpool, I expected to find them also in Norfolk, and Mr. Atmore and I tramped over many miles of sandy coast in various parts of that County without result. At the same time I wrote to the Rev. C. Wilkinson who was then at Castlemartin, and induced him to search on the Pembrokeshire coast, but with no better result.

Now, it has seemed difficult to understand how it could be that when *galii* was common on the south coast, and yet absent (apparently) from the extreme south-west, and also from wide ranges of the east coast, it yet should be common on that of Cheshire and Lancashire. The mountains of Wales and the hills of the Midlands seemed to offer a barrier on the south, and no one would, I presume, believe in its arrival by way of Ireland! But if it manages to hold its own, even in the smallest numbers, on this coast, the difficulty is explained, and the climatic conditions which caused its increase at Dover would then have a similar effect here. I think it right to put this evidence, as it has been offered to me, on record. As in the south of England, the reared specimens are smaller than those from abroad, but the occasional *captured* specimens in the local collections are of fair size.—C. G. Barrett, 39, Linden Grove, Nunhead, S.E.: *September* 15*th*, 1890.

Lepidoptera upon Coast Sandhills.—The scarcity of *Noctuæ* upon the Sandhills of both East and West Coasts this season has been extraordinary. My son went to Hunstanton in August to get me some *Agrotis cursoria*, and in the course of a long search found *one* specimen. I worked during the later portions of the afternoons of several days on the Lancashire and Cheshire coast, and did not see one! In this latter district *A. præcox* is usually rather common, but I only secured three, each on a different day. Even *A. valligera* and *A. tritici* were extremely scarce, and of *Triphæna pronuba*, *T. orbona*, *Xylophasia polyodon* and *Caradrina cubicularis*, I may possibly have seen, in all, a dozen each!

Curiously enough, the more delicate looking insects were not nearly so scarce. Late in the season as it was, I took some nice *Melanippe galiata* and found *Eubolia lineolata* in comparative plenty. On one fairly pleasant evening I secured a fine series of the very local *Peronea permutana* among *Rosa spinosissima*, and found *P. aspersana* and *Spilonota incarnatana* (*amænana*) common.

I went down with a sanguine expectation of obtaining a fresh series of *Lasiocampa trifolii* for the cabinet, knowing how plentiful it used to be on that coast, but was awfully disappointed; not one did I see alive. A sad tale is told, and I fear that it is true. It is said that a young and thoughtless collector, having obtained some duplicates of *Papilio Machaon*, and thereby set all his schoolboy friends and fellow collectors longing for them, made a bargain, that for a fixed number (forty, I think) of larvæ of *Lasiocampa trifolii* he would give a "swallow tail." The schoolboys spread themselves over the district, and hundreds of *trifolii* larvæ were brought in and duly paid for as agreed. These were sent all over the country in exchange, and would doubtless have filled up an aching void in many a collection, but for the perversity of the larvæ, which do not love the post, and decline to feed up when removed from the seaside; but from that time *trifolii* has almost disappeared from the Liverpool district.

This year, however, a few larvæ were found, and the attractions of one or two of the reared females were utilized to secure a few more males. Mr. Harker described their flight to me as very swift and strongly undulating or "jumping." In this they must resemble *L. rubi*. They flew from 7 to 8 p.m., but only assembled to the females at the latter hour, and then but for a few minutes. They would only come on favourable evenings, and when the weather was very rough were not seen flying at all.—Id.

Notes on Bryophila impar, Warren.—Very little seems to be known about *Bryophila impar*; comparatively speaking, so few have ever been taken that entomologists have not had a chance of comparing it with *glandifera*. I have made a careful comparison between a long series of each, the result of which may be interesting to many. There is a very great difference in the general appearance, caused chiefly by *impar* being thickly covered with black scales, and the blotch near the base—referred to below, No. 2 marking—being so conspicuously black, this makes the markings very obscure, and causes *impar* to be a much darker looking moth than *glandifera*.

A long series of *glandifera* shows a greater variety of colour than *impar*, the most frequent form of the latter is grey, with a very slight tinge of dull green in it; and I have specimens varying from this to a very dark bluish-grey, which, with the thick covering of black scales, makes it much blacker than any form of *glandifera*. A much scarcer form is dark yellowish-green; and I have one specimen of a very pretty grassy-green. The greenish-blue and sandy coloured forms, as well as two or three shades of green, which are frequent in *glandifera*, I have not seen represented at all in *impar*.

As regards any difference in the markings, the following comparison is the result of a careful examination:—

GLANDIFERA.	IMPAR.
1.—The first line from the base, which uncurls outward just before reaching the inner margin, is disconnected just before the disc from the costa.	1.—This line is nearly always unbroken.
2.—The next marking is a greenish or brownish-grey blotch, margined with black, and on the side next the base, with white, situated in the top of this blotch is the orbicular stigma, of exactly the same colour as the rest of the blotch, and indicated by the black line by which it is surrounded.	2.—This blotch is black, very slightly influenced by the ground colour, so that it shows no marginal line of black, or any indication of the orbicular stigma.
3.—The reniform stigma slightly darker than the ground colour, clearly outlined by black, and, in some specimens, also white.	3.—Not so clearly outlined, especially the side next the hind margin, and no white.
4.—A zigzag line, margined on the outside with white.	4.—The same line, but less distinct.
5.—The subterminal line is the one unfailing distinction as regards the markings; in *glandifera* it is a clearly marked dotted black line, not quite half way from the costa, two of the spots form a dash on the inside, and another *quite near* the inner margin.	5.—This line is almost entirely wanting; in the most distinctly marked specimens, there is only a small portion, from the inner margin just showing the first dash; but in most specimens the line is only indicated by a whitish shade.

6.—There are about nine or ten black spots along the costa.	6.—These spots form almost a complete line, which is densest near the base, and again about the centre of the costa.

I have been asked several times by correspondents whether I considered *impar* a distinct species, or a variety of *glandifera*; there are several points in favour of and against its being a species. It will be noticed in the above comparison of the markings, that although there are several features by which it can be readily distinguished from *glandifera*, yet, with the exception of the basal line, the distinctions lie in the markings of *impar* being less distinct, and in the case of the subterminal line almost entirely wanting, rather than in any real difference of shape.

The only Cambridge specimen anything approaching *glandifera* that I have seen was taken by Mr. Alfred Jones, and it forms rather a strong point against its being a distinct species; it has the basal line broken, and the distinct subterminal line, as in *glandifera*, but it has the blotch near the base very dark, as in *impar*, and is covered, although not so thickly as is usual, with dark scales. Typical *glandifera*, or anything more nearly approaching it than this one specimen, I do not think has ever been taken in or near Cambridge; if it did occur here, I think I should have taken it, as I look very sharply after *impar* when it is out.

Many entomologists confound *impar* with var. *par* of *glandifera*; this is the greatest mistake that can be made, for, as Guenée describes it, v. *par* is the form having all the markings as distinct as in the type, but of an *iron-grey* colour instead of black, and is peppered with scales of the same colour, and affords a very great contrast with *impar*.

Var. *par* seems to be as common as the type where it occurs, most of my specimens of *glandifera* are from Folkestone, and quite half are the var. *par*.

In the " Entomologist " Synonymic List, *impar* is left out altogether, and *par* inserted as a distinct species. Why this is, I cannot imagine, unless the compiler made the mistake of confounding *impar* with *par*; but, if so, why put it as a distinct species?

The earliest date I have taken *impar* was July 27th of this year, and the latest, August 23rd, 1886; but this year I have seen none since August 14th. I have taken it in most parts of the town, but chiefly in one quarter, even there it is scarce.

Whether it be a species or a variety, it is, I consider, the most interesting thing we take in this district, and will always hold an important place in collections, if not as a distinct species, at least as a very interesting Darwinian one.—WM. FARREN, Union Road, Cambridge: *August*, 1890.

Chrysoclista Linneella.—A month ago, on some lime trees in this road, a few individuals of this beautiful species were leisurely enjoying their newly acquired liberty, but to-day, on the rather rough trunks of the limes at one side of Lewisham High Street, there was an abundance of them, all in the freshest condition. Some males were loitering for mates—it was not a love-*chase*, for the Juliets coyly awaited the advance of the Romeos; but the greater number were already paired. In places portions of the *frass* of the subcortical larvæ still remained on the bark—J. W. DOUGLAS, 153, Lewisham Road, S.E.: *August 13th*, 1890.

Raphidia cognata, Ramb., as a British insect.—In my Monograph of the British *Neuroptera-Planipennia* (Trans. Ent. Soc. Lond., 1868) it is stated that I had seen only one British specimen, in the late Mr. G. R. Waterhouse's collection. In the synonymy of the British species I had, by an oversight, omitted to cite *R. confinis*, Steph. (Illust., Mandib., vi, p. 131, No. 6), and at the request of Mr. Albarda have examined the specimens placed under this name in the Stephensian collection; they consist of *cognata*, 1 ♂, and *xanthostigma*, Schummel, 1 ♀. Under *R. affinis*, Steph. (*l. c.*, No. 4), I find *maculicollis*, Steph., 2 ♀, *cognata*, Ramb., 2 ♀, and *xanthostigma*, Schummel, 1 ♀. I have seen no *recent* British specimens of *cognata*. The three species (*cognata*, *xanthostigma*, and *maculicollis*) are likely to be confused now, as then, in collections; they differ widely in the anal parts of the ♂. There are also good characters in the neuration in both sexes: in *cognata* the third apical vein in the anterior-wings is simple; in *maculicollis* the third vein is also simple, but the first arises directly from the pterostigma as a small curved rudiment; in *xanthostigma*, neither of these conditions obtains. The figures in my Monograph of 1868 are accurate, and the differences are also noticed in the descriptions.—R. McLachlan, Lewisham: *October 4th*, 1890.

Phacopteryx brevipennis, Curt., at York.—Mr. G. C. Dennis, of York, kindly pins for me such specimens of *Trichoptera*, &c., as get into his net when he is working for *Lepidoptera*; and in a consignment he gave me at the beginning of this year was a specimen of *Phacopteryx brevipennis*. The specimen was taken at York, and most likely at Askham Bogs, during the previous autumn, but of this Mr. Dennis is unable to say with certainty. Last evening, too, Mr. Alfred Beaumont, of Lewisham, called here and showed me some insects he had a few days previously picked out of another Lepidopterist's (Mr. Jackson) boxes at York, and among them were two more *Phacopteryx brevipennis!* These were also probably taken at Askham Bogs, and during the past few weeks, as, I believe, Mr. Jackson gave me all the *Trichoptera* he then had when I called upon him earlier in the season. The fact of three specimens being thus casually taken by persons who had no knowledge whatever as to the species, is fair evidence that the insect is not uncommon in the York district. Another interesting species taken by Mr. Dennis near the river at York in June last is *Leptocerus nigro-nervosus*.—Geo. T. Porritt, Huddersfield: *October 9th*, 1890.

Obituary.

Christopher George Hall died at Dover on September 3rd. He was the son of an East India Merchant, and was born in 1842. When we became first acquainted with him, as a lad, he resided at Forest Hill, near London, with his parents, and had then developed a decided taste for entomology. His mother was an accomplished musician, and the son inherited her talents, and for some years turned them to professional advantage, without abandoning his entomological pursuits. Subsequently he resided at Deal, and afterwards at Dover until his death, and did much and good work in investigating the insect-fauna of the district, especially in *Coleoptera*, *Hymenoptera*, *Neuroptera*, and *Hemiptera*, many notes on which, from his pen, will be found in the back volumes (and some in the current vol.) of this Magazine, and in other periodicals. In the last letter received from him, in April of this year, he announced his intention of sending a list of the *Tenthredinidæ* of the Dover district. Hall was a genial, open-hearted, and liberal-minded man in his relations with his entomological friends, and will be much regretted. He leaves a widow and two children.

Owen S. Wilson, F.E.S., of Cwmffrwd, Carmarthen, died on August 24th. We are not acquainted with his early history, but he was educated for the legal profession, and was called to the bar of the Middle Temple in January, 1853, and subsequently practised on the South Wales and Chester Circuit. He joined the Entomological Society of London in 1874. His name is familiar to British Entomologists through his work on "The Larvæ of the British Lepidoptera and their Food-plants," with 40 coloured plates, including 600 figures, from coloured drawings executed by his wife, Mrs. Eleanora Wilson. This work was originally published in parts, and has, no doubt, assisted many Lepidopterists in giving a clue to life-histories, and in determining larvæ unknown to them.

Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: *September 15th*, 1890.—Rev. C. F. THORNEWILL, Vice-President, in the Chair.

Mr. C. Runge, Broad Street, Birmingham, was elected a Member.

Mr. E. C. Tye showed *Cymatophora duplaris* from near Tamworth. Mr. G. W. Wynn showed *Euperia fulvago*, taken by Mr. Tye, on Cannock Chase, at rest, on bracken. Rev. C. F. Thornewill showed *Cidaria populata* and *testata*, and *Eucosmia certata*. Mr. P. W. Abbott showed *Boarmia repandata*, including the variety *conversaria*, taken on sugar at Porlock, Somersetshire. Mr. R. C. Bradley read a paper on three days' collecting on Cannock Chase, in August, and showed the insects taken; they included *Pedicia rivosa* and *Helophilus trivittatus* among *Diptera*, and *Chrysoclista bimaculella* among *Lepidoptera*.

October 6th, 1890.—The President, Mr. W. G. BLATCH, in the Chair.

Mr. P. W. Abbott showed *Xylophasia scolopacina*, from Arley. Mr. W. G. Blatch showed *Homalota crassicornis*, a beetle which he believed to be new to England: the only record with which he was acquainted of its capture in Britain was of three specimens taken in Scotland; he also showed *Euryporus picipes*, a beetle new to the Midlands. Mr. W. Harrison showed a small collection of insects made this year in the New Forest, between July 19th and 26th, and described his experiences there.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—The monthly meeting was held on Monday, October 13th, 1890, in the Free Library, the President (J. S. CAPPER, Esq., F.L.S.) in the Chair.

Mr. P. Schill, of Manchester, was elected a Member.

The President made some remarks on the proposed record of Insect Fauna of Lancashire and Cheshire, and presented the Society with a copy of the work done by the late Benjamin Cooke, one of the former Vice-Presidents; in speaking of this gentleman, the President said, that any work he had done might be relied upon, as he was one of the best authorities on the neglected Orders of insects. A resolution was subsequently passed, appointing the existing Council of the Society to form a Committee for the purpose of undertaking the work. Messrs. Harker and Jones read a paper, entitled, "A week at Howth," in which they gave a graphic description of a week's collecting at this locality, illustrating the paper with a large number of specimens. During the conversazione the President showed some fine varieties of *Arctia Caja*. The Vice-President showed forms of *Vanessa Antiopa* for comparison; and Mr. Sharp, *Coleoptera* collected at Howth.—F. N. PIERCE, *Hon. Sec.*, 143, Smithdown Lane, Liverpool: *October 16th*, 1890.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: *September 25th*, 1890.—J. T. CARRINGTON, Esq., F.L.S., President, in the Chair.

Mr. S. C. G. Russell exhibited interesting varieties of *Zygæna trifolii*, including var. *confluens*, Stgr., from the New Forest. Mr. Mera, *Acronycta ligustri*, from South Devon, also a banded variety of *Argynnis Euphrosyne*, L., from Chattenden. Mr. E. Joy, two forms of the under-side of *Lycæna minima*, Fues. Mr. C. Fenn, *Cidaria immanata*, showing all the varieties generally occurring at Aberdeen, also dark varieties from York, specimens of *Agrotis cursoria*, Bork., from Aberdeen, showing the extremes of variation there, and a specimen of *Ephestia ficulella*, Bar., taken in the Society's rooms. Mr. Jäger, a box of insects taken in the Isle of Man, including *Aporophila nigra*, Haw., *Stilbia anomala*, Haw., *Agrotis tritici*, L., a few specimens of *A. simulans*, Hufn., &c., taken at the flowers of ragwort, *Cirrhædia xerampelina*, Hb., which Mr. Jäger stated were mostly found at the bottom of the ash trees, among the dead leaves, which the moth closely resembled; among the other exhibits of Mr. Jäger were some specimens of *Callimorpha Hera*, L. Mr. Wellman, series of *Hyponomeuta padellus*, L., *H. cognatellus*, Hb., and *H. evonymellus*, L. Mr. R. Adkin, larvæ of *Apamea occulta*, L., also *Myelophila cribrum*, Schiff., and *Homœosoma binævella*, Hb., from the Essex coast. Mr. Bright, a box of varieties of *Lepidoptera*, including many of the genus *Argynnis*, the black form of *Limenitis Sibylla*, L., forms of *Tæniocampa gracilis*, Fb. (New Forest), *Boarmia repandata*, L. (Scotch), and of *Vanessa urticæ*, L., &c. In reply to Mr. Tutt, who expressed an opinion that the last-named was an example of *V. Milberti*, Mr. Bright said that the specimen had been sent him by a Mr. Mumford, and was said to have been taken at Polegate, 1888. Mr. Moore exhibited *Coleoptera*.

October 9th, 1890.—The President in the Chair.

Mr. W. E. Butler, of Reading, was elected a Member.

Adverting to the specimen of *Vanessa* exhibited at the last meeting, and said to have been taken at Polegate, Sussex, Mr. Jenner Weir stated that, in his opinion, the insect in question was *Vanessa Milberti*, a well-known North American species, of which he exhibited specimens from the Canadian North-West Provinces. Mr. C. G. Barrett exhibited the specimen of *Plusia moneta*, Fab., taken near Reading by Mr. Holland, and stated that in his opinion the species was moving northwards. Mr. South, specimens of *Noctua festiva*, Hb., with varieties, and made remark thereon. Mr. C. Fenn, *Tryphæna comes*, Hb., var. *Curtisii*, Newm., and dark forms from Aberdeen, *Agrotis simulans*, Hufn., *Acronycta euphorbiæ*, F., *Agrotis nigricans*, L., *Sciaphila octomaculana*, Haw., all from Shetland, and showing a melanic tendency. Mr. Tutt, on behalf of Lieut. Brown, *Agrotis simulans*, Hufn., from Portland, with Scotch examples for comparison. Mr. T. D. A. Cockerell, *Colias Eurytheme*, Bdv., forms, (1) *amphidusa*, Bdv., (2) *keewaydin*, Edw., (3) *Ariadne*, Edw., (4) *Eriphyle*, Edw., from the United States, and made remarks relative to his exhibits. Mr. E. Joy, living larvæ of *Toxocampa pastinum*, Tr., Mr. Tugwell, bred specimens of *Heliophobus hispidus*, Hb., and said it was just possible in some of the specimens to see a violet tinge. Mr. Hawes exhibited four specimens of *Argynnis Euphrosyne*, L., bred from ova obtained from a female of the summer brood. Mr. A. E. Cook, nests of *Vespa sylvestris*, from Bagshot, Surrey. Mr. Moore, an interesting exhibit of nests and specimens of various species of wasp. Mr. T. R. Billups, *Epeolus productus*, Thoms., taken at Chobham, a series of *Ichneumonidæ*, *Trichoma enecator*, Rossi, bred by Mr. Adkin from *P. hastiana*; also male and female of *Pelecystoma lutea*, Nees.—H. W. BARKER, *Hon. Sec.*

ENTOMOLOGICAL SOCIETY OF LONDON: *October 1st*, 1890.—The Right Hon. LORD WALSINGHAM, M.A., F.R.S., President, in the Chair.

The Rev. Dr. Walker exhibited, and read notes on, a long and varied series of forms of *Crymodes exulis*, collected in June and July last in Iceland. In reply to a question by Lord Walsingham as to whether all the forms referred by Dr. Walker to *Crymodes exulis* had been identified as belonging to that species, Mr. Kirby said the species was very variable, and that several forms had been described from Labrador and Greenland. Mr. South stated that he had examined Dr. Walker's specimens, and he believed that most of the forms exhibited had been described by Dr. Staudinger in his papers on the Entomology of Iceland.

Dr. Sharp exhibited a specimen of *Ornithomyia avicularia*, L., taken near Dartford, to which there were firmly adhering—apparently by their mandibles—several specimens of a mallophagous insect. He also exhibited some specimens of fragile *Diptera*, *Neuroptera*, and *Lepidoptera*, to show that the terminal segments in both sexes might be dissected off and mounted separately without the structures suffering from shrivelling or distortion. Dr. Sharp also said, in reference to the statement made by him, on p. 421 of his paper recently published in the "Transactions" of the Society, as to the number of the segments of the abdomen, and the position of the genital orifice in the female of *Hemiptera-Heteroptera*, that he had recently been making some dissections, and found that the structures externally were difficult of comprehension, and he now thought that the statement he had made from observation, without dissection, might prove to be erroneous.

Mr. G. F. Hampson exhibited and remarked on a series of *Erebia melas*, taken in July last, in the Austrian Alps (Dolomites), by Mrs. Nicholls. Mr. Elwes observed that this species was abundant in the Pyrenees; but although he had frequently suggested to Dr. Staudinger and other European Lepidopterists that it probably occurred in the Swiss or Austrian Alps, he had never been able to obtain specimens from any other part of Europe except the Pyrenees.

Mr. McLachlan exhibited specimens of an extraordinary Neuropterous larva found by Mr. B. G. Nevinson in tombs at Cairo. He said that this larva had been assigned to the genus *Nemoptera* by Schaum, who described it as having been found in tombs in Egypt (Berl. Ent. Zeitschrift, vol. i); and Roux had previously (Ann. Sci. Nat., t. xxviii) described and figured it as an abnormal apterous hexapod, under the name of *Necrophilus arenarius*.* Mr. Nevinson supplemented these remarks with an account of his capture of the specimens in the Egyptian tombs.

Mr. G. T. Baker exhibited a series of forms of species of the genus *Boarmia* from Madeira; and also a series of melanic varieties of *Gracilaria syringella* from the neighbourhood of Birmingham.

Mr. W. F. H. Blandford exhibited and remarked on a series of specimens of *Dermestes vulpinus*, which had been doing much damage to the roofs of certain soap-works in the neighbourhood of London, where it had no doubt been introduced with bones and fat.

Mr. R. W. Lloyd exhibited a specimen of *Carabus catenulatus*, in which the femur of the right fore-leg was curiously dilated and toothed. He stated that he took the specimen at Oxshott, Surrey, on the 27th September last.

The Rev. C. F. Thornewill exhibited a black variety of the male of *Argynnis Aglaia*, taken by himself in July last on Cannock Chase; also a number of living larvæ of a species of *Eupithecia* feeding on the flower-heads of *Tanacetum vulgare* collected in a limestone quarry in Leicestershire. He expressed some doubt as to the identity of the species, but the general opinion was that the larvæ were only those of *Eupithecia absynthiata*.

Mr. H. Goss exhibited, for Mr. G. Bryant, a variety of the larva of *Trichiura cratægi*.

Mr. C. G. Barrett exhibited a specimen of *Plusia moneta*, Fabr., a species new to Britain, taken at Reading by Mr. W. Holland in July last. It was stated that the first specimen of this species was taken at Dover last June, and was now in the collection of Mr. Sydney Webb, of that town.

Mr. W. Dannatt exhibited a variety of *Papilio hectorides*, ♀, from Paraguay. Mr. Osbert Salvin said he believed he had seen this form before.

Mr. C. J. Gahan exhibited a curious little larva-like creature, found by Mr. Green in a rapid mountain stream in Ceylon, and observed that there was some doubt as to its true position in the animal kingdom. It was made up of six distinct segments, each of which bore a single pair of laterally directed processes or unjointed appendages. Mr. Hampson remarked that the appendages were very suggestive of the parapodia of certain chætopod worms, but that all the known polychætous worms were marine. Lord Walsingham and Mr. McLachlan expressed an opinion that the animal was of myriopodous affinities, and was not the larva of an insect.

Mr. Baker read a paper entitled, "Notes on the genitalia of a gynandromorphous *Eronia Hippia*."—H. Goss, *Hon. Sec.*

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* *Cf.* also Westwood's "Introduction," vol. ii, p. 56, fig. 66, i.—R. McL.

NOTES ON THE BRITISH SPECIES OF THE GENUS *ANTHONOMUS*, GERMAR, WITH A DESCRIPTION OF A SPECIES NEW TO BRITAIN.

BY THE REV. CANON FOWLER, M.A., F.L.S.

In the Annals and Magazine of Natural History for the year 1844 (pp. 104—107), Mr. Walton gives some notes on this genus, and he says at the beginning of his paper: "There is the greatest imaginable confusion amongst the species of this pretty and interesting genus of insects; ten have been described as specifically distinct, but I must confess my inability to distinguish out of that number more than four;" in his notes, however, he adds another, making five in all, viz., *A. pomorum*, *A. ulmi*, *A. pedicularius*, *A. pubescens* ?, and *A. rubi*. Mr. Waterhouse, in his catalogue, which was published in 1858, merely copies Mr. Walton's synonymy, but in 1868, M. Desbrochers des Loges, in his monograph of *Anthonomus* and *Balaninus* (Ann. de la Soc. Ent. de France, 1868, 425), made considerable additions to our list of species, apparently on specimens communicated to him by Mr. Crotch: he described Walton's *A. pubescens* ?, Gyll., as *A. britannus*, and quoted two other of his newly described species, *A. Chevrolati* and *A. conspersus*, from Britain, among other localities; he also mentioned *A. rufus*, Schönh., and *A. incurvus*, Panz., as from Britain, but apparently in error; at about the same time Mr. Crotch identified an insect taken by Charles Turner at Rannoch (and first determined to be *A. pubescens*), as *A. varians*, Payk., and separated an insect referred to by Mr. Rye (Ent. Mo. Mag., vi, 88), as a "var. ? *comari* of *rubi*." *A. druparum*, L., had long before been recorded as British, but, as Mr. Walton pointed out, in error, although he was of opinion that it would very likely be found in Britain if the bird-cherry were searched for it; this latter insect is placed alone by Des Gozis (Revue d'Ent., i, 203) in the genus *Anthonomus*, being distinguished from all the other species by its large convex and granulate scutellum, and the fact that the femora are armed with two teeth: all the other species are assigned to a new genus, *Toplithus*; the arrangement, however, is not followed by later European writers.

Up to the present time the genus has stood in the British catalogues as it did in 1868; at the same time there has been considerable confusion with regard to it, and it has always been a well-known crux to collectors; the fact is, that several of the species, especially if we include the European ones, are so closely allied and lead so much by variations one into another, that it is very hard to distinguish with certainty between them; one cannot help thinking that M. Bedel's remark applies to more cases than one, when, in describing *A. conspersus* as very near *A. pedicularius*, he mentions a few characters, none of them very striking, and then says, "les autres caractères signalés dans la description de l'auteur sont illusoires" (Faune. Col. du Bassin de la Seine, Rhynchophora, p. 425). I have found the genus the most difficult among the British *Curculionidæ*, and am not at all sure that the following notes are correct; Des Gozis' new species, *A. Rosinæ*, appears to be distinct, and I think that *A. comari* should count as a separate species; nothing satisfactory appears to be known of *A. britannus*, and it was probably only a variety of an allied species. I do not feel at all sure of the specific value of *A. conspersus*, but I have not seen enough specimens to form a judgment upon: I shall be very much obliged for any notes or corrections.

I. Elytra with a transverse or very slightly oblique band of white pubescence on each, behind middle, sometimes meeting at suture; colour, red or ferruginous, sometimes darker before the elytral band than at apex.

i. Thorax and elytra comparatively flat, if viewed sideways, sides of the former slightly rounded; elytra with a little oblong tubercle or small prominence at the base of the third interstice.

1. Teeth of anterior femora very strong; rostrum longer and more slender, with the antennæ inserted further from apex; anterior tibiæ very deeply sinuate on their interior margin towards base.

A. Length, 3¼—4 mm.; interstices of elytra dull, distinctly rugose transversely ....*A. ulmi*, De G.

B. Length, 2—2¾ mm.; interstices of elytra rather shining, comparatively smooth........................*A. Rosinæ*, Des Gozis.

2. Teeth of anterior femora evidently smaller and less strong; rostrum shorter and thicker, with the antennæ inserted nearer to apex; anterior tibiæ almost straight, and scarcely sinuate on their interior margin ....*A. pedicularius*, L.

ii. Thorax and elytra separately convex, if viewed sideways, sides of the former strongly rounded; elytra without tubercle or prominence at the base of the third interstice; interstices rather shining, almost smooth...
A. Chevrolati, Desbr.

II. Elytra with scattered yellowish or whitish pubescence, which, however, does not form bands; colour, pitchy-brown or pitchy-black, with the legs more or less testaceous..*A. conspersus*, Desbr.

III. Elytra with a strongly oblique band of whitish pubescence on each, sometimes meeting at suture; colour, fuscous or pitchy-black, with the legs more or less pitchy or pitchy-ferruginous ....*A. pomorum*, L.

IV. Elytra without distinct bands or markings of pubescence, but with the pubescence fine and scanty, and evenly distributed over the whole surface, which appears, unless closely examined, to be almost glabrous.

i. **Rostrum shining; anterior femora with a stronger tooth; colour variable, but in British specimens red, with the head and rostrum, and sometimes margins of elytra, black .... *A. varians*, Payk.**

ii. **Rostrum dull; anterior femora with a feeble tooth.**

  1. **Colour, ferruginous; rostrum short............... (*A. britannus*, Desbr.).**

  2. **Colour, black; rostrum long.**

    A. **Thorax with the sides strongly narrowed in front; first joint of funiculus of antennæ much longer than broad; size, larger. *A. rubi*, Herbst.**

    B. **Thorax with the sides very slightly narrowed in front, almost subparallel; first joint of funiculus of antennæ not much longer than broad; size, smaller .... *A. comari*, Crotch.**

A. ulmi is very easily distinguished from *A. pedicularius* by the strong sinuation of the anterior tibiæ, and the more slender rostrum, and by the fact that the antennæ are inserted further from the apex of the latter; the teeth of the anterior femora, also, are stronger.

A. Chevrolati may be known by the characters above given, but they do not appear in some cases to be strongly marked, and the species certainly comes very near *A. pedicularius*; it has been found in the London district, near Deal, and in the New Forest.

A. conspersus is also extremely closely allied to *A. pedicularius*, and I am strongly inclined to think that it is merely a colour variety of that species; it is described as being smaller, narrower, and more parallel-sided, and always of a pitchy-black or pitchy-brown colour, with the antennæ, rostrum, and legs reddish-testaceous, the club of the former being fuscous; the pubescence on the elytra is coarse and scattered, and does not form bands; the legs are testaceous; other distinctive characters are found in the fact that the body is more abruptly sloped off behind, and that the tibiæ appear to be more slender at base; it occurs on the mountain ash, and has been recorded from near Bromsgrove, Chat Moss, and the Solway and Dee districts of Scotland. The colours of the *A. pedicularius* group are variable, and range from a dark brown to brilliant scarlet; I have specimens of *A. pedicularius* that do not differ much in colour from the only specimens of *A. conspersus* that I have had the opportunity of examining, the ground colour being quite dark, and the legs mostly testaceous.

A. pomorum may be known by its colour, and by being always found on apple and pear trees; the band on elytra is nearly always very oblique, but I have a specimen taken by myself from an old pear tree in which it is as straight as in *A. ulmi*; the anterior tibiæ are strongly sinuate, as in the latter species.

A. varians is very distinct, the body being scarlet, with very scanty pubescence, and apparently almost glabrous, and the head and rostrum being black; the latter is very smooth and shining; the thorax is very closely punctured; on the continent the colour appears to vary very much, and is sometimes quite black; the species is found on the Scotch fir in several districts in Scotland; it appears to be exclusively a northern insect; it will be found standing as *A. pubescens* in some of the older collections.

A. rubi is at once known by its shape, black colour, and long slender rostrum and antennæ; the anterior femora are very feebly toothed: immature varieties have the elytra fuscous (v. *brunneipennis*, Curtis); the species is common on *Rubus* and *Rosa.*

A. comari is much smaller than *A. rubi*, of which it has been considered a variety; it may, however, be known, apart from its size, by having the thorax less narrowed in front, the first joint of the funiculus of the antennæ distinctly shorter, and nearly as broad as long, and the femora more strongly dilated in the middle, and abruptly narrowed before apex; the insect occurs locally on *Comarum palustre*, and not on *Rubi* or *Rosæ*, like the preceding species.

A. britannus rests on three specimens "taken by Mr. Doubleday in Herefordshire." Mr. Rye says that "its entirely reddish-ferruginous colour, short dull rostrum, feeble femoral teeth, and small size will distinguish it from any other of its genus;" according, however, to Walton himself it is 3½ mm. in length, and from his remarks (*l. c.*, p. 106) it appears very probable that the specimens were small *pedicularius.*

The following is a description of the new British species, *A. Rosinæ*; I had had specimens separated in my collection for a long time, and sent one to M. Bedel, who returned it as this species; it is most closely allied to *A. ulmi*, much more so than to *A. pedicularius*, but I have found it on hedges in company with the latter; it is a very small species.

A. ROSINÆ, Des Gozis.

Oval, rather convex, of the form of *A. ulmi*, and with the sculpture of *A. Chevrolati*; size, small; colour, varying from reddish-brown to ferruginous, rostrum almost, or entirely, black; antennæ and legs ferruginous, femora usually dark in the middle; elytra with a whitish transverse band, which is wider towards sides and narrowed and interrupted at suture; this band appears to be often abraded; rostrum elongate, cylindrical, almost straight, and rather dull, at all events behind; thorax transverse, slightly rounded behind; scutellum oblong; elytra flat at base, *convex behind*, with a well marked elevation at the base of the third interstice;

punctured striæ moderately strong, interstices flat, rather shining, almost smooth; anterior femora armed with a long sharp triangular tooth; anterior tibiæ very strongly sinuate on their inner margin, the margin being almost angled in the centre.

Length, 2—2¾ mm.

By beating hedges (probably on *Cratægus*), Repton, Burton-on-Trent, and Bircham Newton, Norfolk; I believe that the species is by no means uncommon, and will be found in most collections.

The School House, Lincoln:
October, 1890.

HYMENOPTEROLOGICAL NOTES.

BY P. CAMERON, F.E.S.

I.—NOTES ON BRITISH *CYNIPIDÆ*.

Sapholytus connatus, Hartig, Germ. Zeit., ii, 198.—This species is British; I have reared it from the galls of *Andricus noduli* in Clydesdale. *Sapholytus* merely differs from *Synergus* in having an open radial cellule.

Xestophanes.—We have two species of this genus in Britain—*potentillæ*, Lin., = *splendens*, Htg., = *abbreviatus*, Thoms., Opusc. Ent., 1877, 805, and *brevitarsis*, Thoms., *l. c.*, = *tormentillæ*, Schlechtendal, Ent. Nacht., 1880, 176. The latter species is readily separated from *potentillæ* by the third antennal joint being perceptibly longer than the fourth, by the parapsidal furrows being complete, and by the fourth joint of the hinder tarsi being hardly longer than broad. *Potentillæ* forms galls on *Potentilla reptans; brevitarsis* on *Potentilla tormentilla.*

Aulax graminis, Cam.—I cannot distinguish this species by any characters, structural or in coloration, from *A. hieracii*, and am inclined to think the two are identical, notwithstanding that they are found on such different plants. This conclusion seems the more likely from *A. hieracii* having been bred from galls on *Linaria vulgaris* and *Cytisus capitatus; cf.* Mayr, Cynip. Gallen, p. 9.

Aulax minor, Htg.—I should say that this species is only a variety of *A. papaveris*. According to Hartig and Mayr, it differs from *papaveris* in the antennæ being "brown," often yellowish or reddish at the base, the scutellum without a furrow, and the abdomen in ♀ more or less yellowish or castaneous-brown beneath. I find, however, so much variation in all these points, as also in size, among specimens reared from poppy capsules collected in the same field and at the same time, that I cannot quite look upon *minor* as a good species.

Aulax glechomæ.—If not common, this species appears to have a very wide range in Britain. I received specimens this autumn from the Isle of Man, where the galls were taken by Miss Constance Abrahall. *Glechomæ* and *papaveris* may be known as follows:—

Mesonotum glabrous, shining, more or less impunctate in the centre, pleuræ striolate, *glechomæ.*
Mesonotum pubescent, opaque, pleuræ aciculate .... *papaveris.*

As regards the galls of *Aulax glechomæ*, it is stated by Hopkirk in his "Flora Anomoia," p. 101, that they "are eaten by the country people in France like those on the branches of some of the sages; they are used when young, as they become dry and stringy from age."

Aulax hypochœridis, Kieffer, Verh. z.-b. Ges. Wien, 1887, p. 205, may be added to our list. It forms swellings on the peduncles of *Hypochœris radicata.*

Periclistus.—The two British species are easily separated. *P. Brandti*, Ratz., having parapsidal furrows, *P. caninæ* none. The former lives in the galls of *Rhodites rosæ*; the latter in those of *R. eglanteriæ.*

Rhodites.—The following table will assist in the determination of the British species:—

A. Radial cellule short, triangular, the basal abscissa angled or elbowed in the middle; the areolet present.
1 (4) Legs for the greater part red.
2 (3) Abdomen reddish, the radial cellule with a smoky fasciæ ....*rosæ.*
3 (2) Abdomen blackish or brownish-black, the radial cellule without a smoky fascia ....*spinosissimæ.*
4 (1) Legs for the greater part blackish ......*rosarum*, Gir., = ? *nervosus*, Curt.
B. Radial cellule elongate, the basal abscissa of the radius curved, not angled, the cubitus obsolete (= *Hololexis*, Foer.) ....*eglanteræ*, Htg.

II.—NOTES ON *FOSSORES.*

The following species, described by F. Smith as *Larrada*, are referrable to *Notogonia*, Costa:—*Alecto*, Journ. Linn. Soc., ii, 103, 6; *exilipes*, Cat. Hym. Ins., iv, 27a; *laborosa*, *l. c.*, 278, 12; *Tisiphone*, Journ. Linn. Soc., ii, 103, 5; *tristis*, Cat. Hym. Ins., iv, 277, 10; *vestita*, Ann. Mag. Nat. Hist., xii, 11; *modesta*, Journ. Linn. Soc., iii, 159; *ducalis*, *l. c.*, v, 84; *docilis*, Trans. Ent. Soc., 1873, 192. The undernoted belong I believe to *Larra*, Kohl:—*rufipes*, *prismatica* and *glabrata.*

Philanthocephalus, Cam., Biol. Cent. Am. Hym., ii, 86, = *Trachypus*, Kl.

Sale, Cheshire: October 12th, 1890.

DESCRIPTION OF A NEW SPECIES OF THE GENUS *PHANÆUS*, MACLEAY.

BY B. G. NEVINSON, M.A., F.E.S.

PHANÆUS EBENINUS, *sp. nov.*

Omnino nigerrimus, subnitidus. Caput rugose-punctatum, clypeo integro vel subemarginato. Thorax cum marginibus leviter sed distincte reflexis, ad basin processu instructus. Elytra late striata, striis opacis, interstitiis angustis, convexis, subnitidis. Pygidium nigrum, crebre sed minutissime punctatum. Subtus niger, metasterno lævi, antice in spina longa et acuta producto; pedibus nigris, tibiis anticis obtuse tridentatis; pube nigro-picea. Long., 25 mm.

Mas major.—Capitis cornu longo, recurvo, antice minute punctato. Thorax lævis impunctatus, angulis anticis productis, in medio cornubus duobus erectis, apicibus acutis incurvatisque, intra ea planus haud impressus, sed extra valde excavatus.

Mas minor.—Capitis cornu breve. Thorax lævis, tuberculis duobus obtusis antice in medio positis.

Femina.—Capitis vertex transversim carinatus. Thorax convexus subtilissime punctatus angulis anticis non productis, marginibus latero-anticis haud sinuatis; in medio tenuiter carinulatus, utrinque foveolatus, carinâ, multo minus quam in *conspicillati* femina, curvatâ. Tibiæ anticæ tarsis minutis instructæ.

This species must be placed next to *Ph. conspicillatus*, which in general form it much resembles. Apart from its uniformly black coloration, it differs from it in the following particulars:—the head horn is much more sharply recurved and minutely punctured on its anterior surface; the thoracic horns are more slender and sharper at the apex, while there is no depression whatever between them, the dorsal surface being merely gently rounded, almost flat; the deep sulcus external to them is more sharply defined and more limited posteriorly in extent; the lateral margins of the thorax are not nearly so sinuous, and are narrowly but distinctly reflexed all round, save at the scutelliform lobe in the middle of the base. The elytra differ widely, their striæ being broad and opaque, the interstices narrow, convex, and polished on their summits. The origins of the third and fourth striæ are merged in one large depression. The pygidium is very minutely and closely punctate, whereas in *conspicillatus* the punctures are large and less frequent. The whole of the underside, with the femora, tibiæ and tarsi is black; the pubescence blackish-piceous.

The finest examples of this species with which I am acquainted, and from which the above descriptions were taken, are in the collection of M. R. Oberthür, to whose liberality I am indebted for the specimens in my own. There is an example of the *mas minor* form in the Hope Collection at Oxford bearing a label (apparently in Burmeister's handwriting) with the name *ebeninus* upon it, which name, being peculiarly applicable to the species, I retain. The few specimens I have seen are from French Guiana.

6, Tite Street, S.W.:
***November* 11*th*, 1890.**

TRICHOPTERA OBSERVED IN THE EXMOOR DISTRICT IN AUTUMN.

BY ROBERT McLACHLAN, F.R.S., &c.

The following notes will serve as a contribution to our knowledge of an English district previously unexplored for *Trichoptera*. On September 15th, 1890, I arrived at Dunster (Somerset) at the eastern end of Exmoor, where I met my friend Mr. H. S. Eaton, and there stayed until the 25th. A few days later we were joined by the Rev. A. E. Eaton, who remained until October 9th. During this time the whole neighbourhood was tolerably well traversed, including an ascent of Dunkery Hill (1700 feet), and other hills of less altitude. The Rev. A. E. Eaton also explored the hills above Porlock (further west) for part of one day. Moreover, Mr. Stanley Edwards, of Blackheath, worked the vicinity of Lynton (North Devon), near the western end of Exmoor, from August 8th to September 18th, and succeeded in taking 21 species, a larger number than were observed to the east (notwithstanding that he was chiefly occupied with another Order), which may perhaps partly arise from the western end of the moor being more prolific, and partly from the earlier period at which he commenced operations. These indications will serve as notifying the observers, whose names will not be repeated in the following list. It is believed that the list gives a tolerably good idea of the species occurring at the season on the northern slopes of the Exmoor watershed, for many whole-day excursions were made, necessitating walks of many miles, and frequently by no means easy going, due to the deep, densely wooded "combes" by which the district is intersected. But it is possible that, owing to the mildness of the climate, some very late autumnal species had scarcely appeared in the perfect state. The experience gained reveals several interesting and new points in the distribution of the English *Trichoptera*, but as it only concerns those species that occur in, or last into, autumn, a spring and summer record is yet wanted, in order to furnish anything like a complete list of the *Trichoptera* of Exmoor. The district is noticeable as being the only one in England where *wild* red deer still exist, and in large numbers; blackcock abound, and the raven lingers on, even in the vicinity of the villages. It was gratifying to me that (with the single exception of a miserable jackdaw "crucified" on a post) I saw no indication of indiscriminate and insensate destruction of gamekeepers' so-called "vermin."

LIMNOPHILIDÆ.

Limnophilus lunatus, Curt.; Dunster, stream on flat ground near the sea. *L. centralis*, Curt., and *vittatus*, F.; Lynton, one of each.

Asynarchus cœnosus, Curt.; Lynton, one ♂ of large size: I think this had not previously been observed in England south of the Yorkshire moors.

Stenophylax stellatus, Curt.; Dunster and Lynton, a few. *S. concentricus*, Zett.; Lynton, one ♀.

Micropterna sequax, McLach.; Lynton, one ♀.

Halesus digitatus, Schrk., and *H. radiatus*, Curt.; one ♂ of each near Dunster: probably somewhat too early for these late insects.

Drusus annulatus, Steph.; everywhere at streams, the commonest species in the district: those on low ground near the sea distinctly smaller and paler.

Apatania muliebris, McLach.; Lynton district, one ♀, a new locality: the determination is presumably correct, but more material is desirable.

SERICOSTOMATIDÆ.

Sericostoma personatum, Spence; Dunster and Lynton, a few ♀ only, flying at sunset: these may be looked upon as late stragglers.

Silo pallipes, F.; Dunster, rare; Lynton, apparently common.

LEPTOCERIDÆ.

Odontocerum albicorne, Scop.; Dunster, a few; Lynton, in abundance.

HYDROPSYCHIDÆ.

Hydropsyche instabilis, Curt.; Lynton.

Philopotamus montanus, Donov.; generally distributed: those from high up the streams are very small, and simulate *Polycentropus*.

Wormaldia occipitalis, Pict.; Dunster district, not rare high up, especially at the sources of the streams on the hill sides: the examples are large and dark. *W. subnigra*, McLach.; Lynton, one ♂.

Polycentropus flavomaculatus, Pict.; Dunster and Lynton, a few. *P. Kingi*, McLach.?; three ♂ from Lynton perhaps belong here, but I am by no means satisfied about them: perhaps they form a distinct species, which I think I possess from another locality. I have not yet seen either *Kingi* or this form alive, and the anal parts are not easy to discriminate in dry examples.

Tinodes wæneri, L.; Lynton: the examples are small.

RHYACOPHILIDÆ.

Rhyacophila dorsalis, Curt.; abundant over the district, but chiefly confined to the lower portion of the streams. *Rh. obliterata*, McLach.; locally abundant over the district, seldom seen at the lower portion of the streams; the ♀ was not observed: in my "Trichoptera Britannica" (1865) it is stated that I had seen an example of this species from North Devon, no locality mentioned; it may have been from Lynton. *Rh. munda*, McLach.; not observed near Dunster; abundant in Horner Valley, near Porlock, but only one ♀; also Lynton: this very local species prefers torrentine cold clear streams filled with boulders: a new locality. At the streams of South Devon flowing from Dartmoor, where *munda* was first detected, it is very abundant; *obliterata* has not yet been discovered at these streams, but may possibly occur at points higher up which I have not visited.

Glossosoma vernale, Pict.; Timberscombe, one ♂.

Agapetus fuscipes, Curt,; Dunster, abundant on low ground near the sea and higher up: those from the low ground are very much the larger. Lynton.

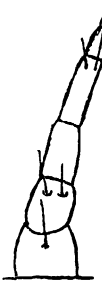
Thus it will be seen that 26 species were taken in the district, a very fair number for an English hilly moorland in autumn.

Lewisham, London: *October 24th*, 1890.

NOTES ON SOME BRITISH AND EXOTIC *COCCIDÆ* (No. 18).

BY J. W. DOUGLAS, F.E.S.

LECANIUM ROBINIARUM, *n. sp.*



♀ adult. Scale short, round-oval, or in some examples almost circular, very convex, chestnut-brown, very shining, smooth, mostly with a few very slight punctures here and there, without any dorsal keel or tesselation. Antennæ (fig.) stout; of 7 joints, 1st stoutest, with one hair; 2nd scarcely so thick, in length subequal, with two hairs; the others thinner; 3rd longer than 2nd, without hairs; 4th much longer, the longest of all, with two hairs; 5th and 6th short, together scarcely longer than the 3rd; 7th as long as the 2nd, pointed, with several hairs, of which one (apical) is very long. Legs normal.

Length, 4·5—5; breadth, 4; height, 3 mm.

The scales were filled with white powdery matter, consisting of the exuviæ of the escaped larvæ, showing that they were quite mature. Sometimes, as the scales were greatly agglomerated on the shoots of the *Robinia*, the form is somewhat altered by the pressure, during the early stage of formation, of one scale impinging on another; in such cases the hollowed space is a little wrinkled on the margins thereof.

This species appears to approach *L. wistariæ*, Sign. (Ess. Cochen., p. 263) in its rounded form, and in having seven joints to the antennæ; but that species in the adult state is blackish, and almost rugose with punctures, while this is very smooth, as if polished; and the proportions of the joints of the antennæ are quite different. There is no other species with seven joints in the antennæ with which it can be compared.

On April 5th, 1890, I received from Dr. Horváth, of Budapest, some shoots of *Robinia pseudacacia* on which were clustered many scales of this species, which Dr. Horváth states is very injurious to the *Robinia* in Hungary. It appears to have immunity from the attack of Hymenopterous parasites, not one of the numerous scales I received having been perforated by them. There were no scales of the male.

The figure is by Mr. G. S. Saunders.

LECANIUM FUSCUM.

(*cf.* Ent. Mo. Mag., xxiv, p. 98).

♀ scale. *Immature form before oviposition.* Light reddish; broadly rounded oval, rather widest in front, with a wide base of attachment to the shoot, flat-convex, *shining*, smooth but with very small punctures all over; on the first third a white *undulated line* of irregular width extends entirely across the scale; close to this posteriorly a large white blotch with dentate edges occupies the middle of the scale longitudinally, lying in a very slight depression, of which the margins are in the least degree obtusely raised; on each side of this and distinct from it is a broad, dentate, white patch, which does not extend to the lateral margin and reaches almost to the anal cleft. Length, 5; breadth, 4; height, 3 mm.

Larva. Ochreous, oval, rounded at both ends, margin with very short hairs; anal cleft wide and long, the two setiferous lobes within the cleft not extending beyond the circumference of the body; mentum entire, not articulated. Antennæ of 6 joints, with long hairs, one of them longer than the others on the 3rd, 4th and 5th joints, and one still longer on the 6th. Legs with long, slender, knobbed digitules, two longer than the others. These characters, which are quite those of a *Lecanium*, and not of *Kermes* as might have been suspected from the rotundity of the ♀ scale, have been verified by Mr. G. S. Saunders.

On May 12th, 1890, I received from Dr. Chapman, of Hereford, three examples, on last year's oak-shoots, of the immature form described above, which differ essentially from the perfect state, and it has not been noticed before. At the same time I also received some precisely similar scales on oak-shoots from Mr. R. Newstead, Chester. In a week all had become brown, the markings had disappeared, and the scales had collapsed.

On June 10th Dr. Chapman sent on oak-shoots some of the mature scales, a few of them containing eggs. These hatched on June 23rd, and the larvæ produced are described above. It is curious that none of the sound mature forms examined possessed antennæ or legs, these apparently having become atrophied when they had served their purpose, just as they always do in the *Diaspina*. This also was Signoret's experience with some species of *Lecanium* and *Kermes*, but was not so generally.

The male, bred by Mr. Newstead in May, from an ordinary glossy scale, is quite of the generic type, and presents no special specific characters, as indeed is often the case in this genus.

From mature ♀ scales received this year a quantity of Hymenopterous parasites emerged: some of these I sent to Mr. L. O. Howard, of the Entomological Division of the United States Department of Agriculture, and he writes respecting them:—

"I find two parasites. The larger ones are the females of a variety of *Blastothrix sericea*, Dalman. They differ from the normal form in that the last one or two funicle joints of the antennæ are brown instead of yellow-brown. The smaller specimens with the long hairy antennæ are males of the same species. There were 13 females and 24 males in the quill, and also two specimens of a species of *Pachyneuron* which I cannot determine specifically. The habits of *Pachyneuron* have been disputed, but the truth is that there seems to be little uniformity of habit in this genus. Species have unquestionably been bred from larvæ and puparia of Syrphid flies, whilst others have been bred from Aphids and Coccids."

153, Lewisham Road, S.E.:
October 17th, 1890.

DESCRIPTIONS OF TWO NEW SPECIES OF *EUPLŒA* FROM THE SOUTH SEA ISLANDS.

BY HAMILTON H. DRUCE, F.E.S.

Euplœa (Nipara) Walkeri, *sp. n.*

♂. Allied to *Nipara intermedia*, Moore, from which it differs by the much larger discal spots, notably the lower one, which is about twice the size of that of *N. intermedia*, and the apical band of spots is large and distinct. On the hind-wing the submarginal row of oval spots is rather narrower, but much more clearly defined, and closer to the marginal row, which is also very distinct. Under-side, as above, but with a small blueish-white spot in the cell of the fore-wing near the end, three more just beyond, and eight on the central area of the hind-wing, as in *N. helcita*, Boisd., and *N. Eschscholtzii*, Feld. Expanse, 3¼ in.

Hab.: Tahiti, Society Islands. Mus. Druce.

I have named this form after Mr. J. J. Walker, R.N., who obtained it and the following species.

Euplœa (Nipara) unicolor, *sp. n.*

♂. Uniform dark brown, without any spots or markings. Under-side nearest to *N. indistincta*, Moore, but the spots on the fore-wing much smaller, and on the hind-wing the marginal row has entirely disappeared, and the submarginal is scarcely distinguishable.

♀. Upper-side, as ♂, but a lighter shade of brown, and with a white spot on the costa. Underside, as ♂. Expanse, ♂, 3½ in.; ♀, 3¼ in.

Hab.: Aitutaki, Cook Islands. Mus. Druce.

We possess a ♂ specimen, which I take to be a variety of this species, which has a small white spot on the costa at the end of the cell, this being the only marking on both surfaces of the wings, with the exception of several small bluish spots just beyond the cell on the under-surface of hind-wing, whilst the apex of fore-wing, and the whole area of the hind-wing, is of a pinkish tinge beneath.

London: *October*, 1890.

GREAT FLIGHT OF *CULEX*, *TIPULA*, AND *TETRAMORIUM* IN NEW ZEALAND.

BY W. W. SMITH.

In the "Field," of December 7th, 1889, I called attention to the occurrence in New Zealand of some abnormal swarms of *Culex argyropus*, Walk., and made some remarks on great flights of other species, that I had observed in previous years. Throughout the past season, which has been truly an entomological year in New Zealand, I have learned of other great swarms in different parts of the country, and observed one myself, which I now propose to record.

The first great flight of *C. argyropus* occurred on September 19th of last year, in the Little river district of Canterbury, about eighteen miles from Christchurch. The "Lyttleton Times," in describing the great swarm, stated that the excursion train which went to Little on the day of its occurrence, "passed through a wall of mosquitos or midges, three-quarters of a mile in length, twenty feet high, and eighteen inches thick;" about the same time I observed other unusually large flights in this district, but certainly nothing to compare with the one at Little river. In discussing the causes of these abnormal swarms, which appear at varying intervals of years in New Zealand, I attributed their great numbers and much earlier appearance in the season to the previous mild winter, and to the calm, moist, and warm weather which prevailed at the time; undoubtedly, drizzling, warm rains, with flashes of hot sunshine, are peculiarly adapted to the life-habits of the larvæ and to the rapid development of *Culex*.

Tipula novaræ, Schiner.—On January 15th of the present year, I was across the Ashburton river at Tinwald village, and noticed immense numbers of this species entangled in spiders' webs attached to trees and gorse hedges, and in still pools in the Tinwald domain, although many of them were dead, great numbers were flying about, or were moving slowly through the grass, or on the gorse fences, while a considerable number were resting, or moving slowly about *in copulâ.* Their occurrence in such vast numbers together is certainly phenomenal, in fact, no doubt due to the exceptionally hot, calm season, such being peculiarly favourable to the development of the larvæ, and to the assembling of the delicate imagos in large numbers, such, in many cases, would produce a favourable selection, and also produce a considerable renewal in numbers of the species.

Tetramorium nitidum, Smith.—Before the time for the swarming and migration of this minute species of ant, I wrote to several friends living in different parts of Canterbury, requesting them to keep a strict look out for any large flights of insects that were likely to appear in their districts, at the same time asking them if such occurred, to capture a few specimens and send them to me. From two correspondents, living thirteen miles apart, I have received some specimens of *T. nitidum*, together with some interesting letters describing two large swarms: on March 2nd, a great flight was observed near the Rangitata Gorge, and on the 10th another occurred at Mount Somers; on the 12th, I observed a small swarm near Ashburton; but it is only in the more sparsely settled districts, or such as have not been disturbed by the plough, that we can now expect to meet with great flights of ants. The plough is a ruthless enemy of ants in utterly destroying their nests in arable districts, although a few nests can generally be found about sloping terraces in settled districts where the plough cannot reach; they are invariably smaller, and the number of individuals in each are much fewer, compared to such existing in undisturbed parts of the country. The habits of the moving columns of ants observed by Mr. H. W. Bates in the forests of the Amazon valley have been charmingly described by this author, but no one who has not observed a large flight of *T. nitidum* could imagine the vast numbers which comprise it. They invariably migrate in calm, sultry weather, as it would otherwise be quite impossible for this minute and delicate species to do so during the slightest motion of the air. The last great flight I observed moved very slowly in its course, while their "hum" or motions were only slightly audible; as we were travelling alongside a wire fence at the time we met the flight, we halted, and observed that great numbers rested on the posts and wire, and after apparently resting their wings for a few seconds, again rose and joined the swarm, their minute hyaline wings, while resting, reflected beautifully in the sunshine.

Of late years, the causes of the great abundance of certain species of insects in some seasons have been investigated by several eminent entomologists, but the question is yet far from being settled; if we consider the delicate structure of the three species, whose appearance in great numbers in the past season I have mentioned, we may safely conclude that the natural conditions requisite for their development were exceptionally favourable during all stages of their existence. The long continuance of calm weather throughout the season would enable them to assemble into large flights, and also explain the appearance of numerous other species, which have been exceedingly common during the season. We have now been favoured with two seasons comparatively free from wet or strong weather, both of which are very destructive to insects; unquestionably, the appearance of certain species in phenomenal numbers in some seasons has an important bearing on the power and operations of the law of natural selection among insects, but at present I leave the main features of the case, and with the aid of further observations, which I hope to gather during the coming season, shall endeavour to more clearly elucidate this important and inviting subject.

East Belt, Ashburton, N.Z.:
September 5*th*, 1890.

MEYRICK'S *PYRALIDINA* OF EUROPE.

BY PROFESSOR C. H. FERNALD, F.E.S.

Mr. Meyrick's revision of the *Pyralidina* of Europe, in Part III of the Transactions of the Entomological Society of London for 1890 is one of the most important papers on Systematic Entomology that has appeared for a long time. Some may think that he has been very radical, or even rash, in sweeping away so many of the old landmarks. He has surely done it with a boldness worthy of an Englishman, but I believe he is right in the main, if not in every particular. The only mystery to me is, that this was not done years ago by some one in England or on the continent.

Such work as this is of far greater value to foreign students than the describing of new exotic species. I wish to say in this connection that it is my firm conviction that the work of Francis Walker on North American insects was a positive hindrance to the advancement of entomological science in this country, and a disadvantage to the present workers in the British Museum, for it has caused us to look with suspicion on all work emanating from that source.

It is not my purpose to criticize or review this masterly paper of Mr. Meyrick's, but to call the attention of English and continental working entomologists to it, and express the hope that it may receive a full and just examination, so that if errors occur in it they may be indicated; and no one will be more grateful for the detection of actual errors, if pointed out in a kindly manner, than Mr. Meyrick himself.

Some may object to the use he has made of certain generic names, but I wish to say here that I went over the history of these names some time ago, and am prepared to say that in my opinion he is right. It will seem strange, however, not to see the generic name *Botys* in our lists of the Pyralids hereafter, but Mr. Meyrick has shown that if it be used correctly, it must be among the *Geometridæ*.

There may be honest differences of opinion on certain questions of relationship and development, and we shall all be very glad to hear them, so long as they do not run into controversy, but when they reach that stage, the editorial foot should be put down. No one enjoys these things except those who have a hand in them.

Mr. Meyrick's paper will undoubtedly meet a hearty reception wherever foreign students are working up their *Pyralidina*.

Amherst, Mass., U. S. A.:
October 19*th*, 1890.

TRYPETA BIGELOVIÆ, *n. sp.*

BY T. D. A. COCKERELL.

Trypeta sp., Ckll., Ent. Mo. Mag., Aug., 1889, xxv, 363 (*sine descr.*). *Trypeta bigeloviæ*, Ckll., Entom., March, 1890, xxiii, 75 (gall only). *Trypeta bigeloviæ*, Ashmead, Hymenoptera of Colorado, Bull. 1, Colorado Biological Assoc., 1890 [pub. May 24th], p. 25 (name only).

Length, 3½ mm. Head pale lemon-yellow, eyes bright green; thorax covered with whitish hairs, and having also a few black bristles. Scutellum olive-brown, bare, emitting two long black bristles. Abdomen oval, black or very dark brown above, pale yellow beneath. Legs honey-yellow. Halteres pale lemon-yellow. Wings yellowish at base, otherwise black with hyaline spaces, namely, three on costa; one, elongate, below apex; one, <-shaped, lower than that; three on inferior margin, the interior one being the largest; and two hyaline spots in the middle of wing.

var. *disrupta*. The <-shaped hyaline mark divided into two by the obliteration of its apex.

Described from fresh specimens, bred May, 1889, from woolly galls on *Bigelovia graveolens*, Gray, found at West Cliff, Custer Co., Colorado. I also found the galls at Dora, Custer Co., and near Hillside, Fremont Co., Colo. I offer a description of this apparently new species especially because the gall has already been described under the name *T. bigeloviæ*, and it is therefore very desirable to have means of recognising the fly which produces it.

The following insects have also been bred from the Trypetid galls on *Bigelovia*, collected at West Cliff:—

(1). *Cecydomyia bigeloviæ*, Ckll., Ent. Mo. Mag., April, 1890, p. 109.

(2). *Anthonomus canus*. I found a specimen of this weevil in a box in which I had placed some Trypetid *Bigelovia* galls. No doubt it was bred from one of them, but its connection with *T. bigeloviæ* is not yet proved.

(3). *Torymus* sp.

(4). *Eurytoma bigeloviæ*, Ashmead, Bull. 1, Colo. Biol. Assn., 1890, p. 25.

Near Ula, Colorado, I found a small greyish Lepidopterous larva with a black head, in a gall of *Trypeta bigeloviæ*, but the imago was not reared. Near West Cliff, on May 2nd, 1890, I found some galls on *Bigelovia* differing from those of the present species, being round, harder, scantily woolly, diam. 6 mm. A puparium within was elongate-cylindrical, dark brown, rounded at ends. There is also a third kind of gall on *Bigelovia* in the same district, but the insect that makes it is unknown. I am indebted to Mr. W. H. Ashmead, Dr. C. V. Riley, and Mr. L. O. Howard for assistance towards the identification of the insects mentioned.

3, Fairfax Road, Bedford Park,
Chiswick, W.: October 28th, 1890.

ON A NEW SPECIES OF *TOMODERUS* FROM JAPAN.

BY G. C. CHAMPION, F.Z.S.

TOMODERUS CLAVIPES, *sp. n.*

Elongate, convex, broad, pitchy-black, the head narrowly in front and the prothorax dark castaneous; the upper surface shining, and somewhat thickly clothed with moderately long, decumbent, brownish pubescence. Head broad, transverse, very minutely and very sparsely punctured, smooth on the disc, the eyes not prominent; antennæ entirely testaceous, stout, joints 8—10 wider than those preceding, transverse (9 and 10 very strongly so), 11 longer than 10, acuminate; prothorax longer than broad, a little narrower than the head, strongly constricted at the sides behind the middle, the transverse groove separating the anterior and posterior portions extremely shallow on the middle of the disc, but very deep at the sides, the anterior portion without trace of a median groove, the surface punctured like that of the head; elytra moderately long, about three times as wide as the prothorax, regularly ovate, a little flattened on the basal portion of the disc, closely, finely, and confusedly punctured throughout, the humeri completely effaced, the apices rounded; legs entirely testaceous, stout, the femora very strongly clavate; beneath ferruginous, closely and finely punctured; anterior tibiæ a little dilated within in their outer half, and the fifth ventral segment truncate, in the male; body apterous.

Length 3⅔, breadth 1⅓ mm.

Hab.: JAPAN, Osaka.

Two examples, captured by Mr. G. Lewis on July 8th, 1881. This fine species differs from all the other members of the genus known to me in having the characteristic transverse groove of the thorax very shallow on the middle of the disc; the femora are very strongly clavate; the elytra are regularly ovate, without trace of humeri; the head and thorax are almost smooth, and the elytra are finely but very distinctly punctured from the base to the apex. It will probably have eventually to be separated from *Tomoderus*—if *Formicomus* is to be retained as distinct from *Anthicus* (*T. clavipes* differing in the same way from the species referred to the genus by its author, as does *Formicomus* from *Anthicus*); but as Reitter and others include species with similarly formed elytra (*e. g.*, *T. scydmænoides*, Reitt.) in the genus, I place it here for the present.

In *T. scydmænoides* (from the Caucasus) the elytra are absolutely soldered together, and the body is, of course, apterous. In the European *T. compressicollis*, Motsch., and in all the American species I have examined, the elytra have more or less prominent humeri and the body is winged. Compared with *Holcopyge* (*cf.*, *ante* p. 292), *T. clavipes* differs by its simple terminal dorsal segment, relatively shorter first ventral segment (only a little longer in the middle than segments 2 and 3 united), long metasternum, and much less inflated elytra;

viewed from above it appears to have the thorax deeply foveate on either side behind (much as in La Ferté's fourth division of the genus *Anthicus*), and the transverse groove interrupted in the centre. *T. clavipes* is no doubt congeneric with *T. scydmænoides*: in the latter the mesosternal process is more broadly and more distinctly raised between the middle coxæ than it is in *T. clavipes*, but this is not of much importance. In some of the American species, and in *T. clavipes* and *T. scydmænoides* also, the intercoxal process of the abdomen is very broad and almost or quite truncate in front. The ovate shape of the elytra and absence of humeri is no doubt characteristic of the apterous condition of the body, but this cannot alone be regarded as of generic importance, *Formicomus* containing both apterous and winged species.

11, Caldervale Road, Clapham:
October, 1890.

Note on the genus Dischidus, Kolbe.—In the Entomologische Nachrichten, xii, p. 297 (1886), Kolbe has proposed the genus *Dischidus* for *Tenebrio sinuatus*, Fabr., and its allies, he probably being unaware of the fact that C. O. Waterhouse had ten years before, Ann. and Mag. Nat. Hist., ser. 4, xvii, pp. 288 and 289 (1876), characterized the species in question under the generic name *Taraxides!*—ID.: *November 8th*, 1890.

Bidessus unistriatus, Sturm, &c., in East Norfolk.—While staying at Waxham on the Norfolk coast, about midway between Yarmouth and Cromer, in the latter part of June and the beginning of July last, I devoted a good deal of time to the investigation of the Coleopterous fauna of the vicinity. The sea coast itself, with its monotonous shifting sandhills, from Winterton on the one side to Hazeboro' on the other, proved to be almost barren as regards *Coleoptera*. But the "broads" and "meres" inland, including those of Horsey, Somerton, and Hickling, were fairly productive, especially in *Dyticidæ* and *Gyrinidæ*; and as little else of interest was to be met with, I chiefly confined myself to the use of the water net. The publication of Mr. Edwards' useful paper on the British *Gyrinidæ* (Entom., xxiii, pp. 105—109), and two afternoons' collecting in company with that gentleman, induced me to pay a good deal of attention to these somewhat neglected insects. Amongst the *Dyticidæ*, the most noteworthy species observed was *Bidessus unistriatus*, Sturm: this insect occurred in abundance in various localities in the district, in the shallow reaches of the broads, and sparingly in the ditches, always where the water was partially stagnant. It seems strange that it should have remained a rarity for so many years in this country, though the allied and extremely local *B. minutissimus*, Germ., was known to have a somewhat similar habit. Amongst the *Gyrinidæ*, no less than seven out of the ten British species of *Gyrinus* occurred more or less freely; and the "Broad" district of East Norfolk would appear to be by far the richest locality for these insects in Britain. The only locality known to me at all approaching it is Deal, but not more than four, or at the most five, species have yet occurred there. Of these seven species, examples of four (*G. marinus*, Gyll., *G. natator*, Linn., *G. elongatus*, Aubé, and *G. minutus*, Fabr.), were occasionally obtained from one dip of the water net, these all being of gregarious habits, and clustering together in hundreds, indiscriminately, on the open water; the other three, *G. colymbus*, Er., *G. bicolor*, Payk., and *G. Suffriani*, Scriba, frequented the shelter of the reeds along the margins of the broads and ditches, and were much less sociable. *G. marinus*: by far the most abundant species, and in point of numbers probably equalling all the other *Gyrini* together. *G. natator* (including examples apparently intermediate between the typical form and the var. *mergus*, Ahr.): common. *G. elongatus*: common, on the open water and in sheltered places. *G. minutus* and *G. Suffriani*: freely in some places; the former not hitherto seen alive by me so far south, the latter also met with at Ranworth and Honing (not Horning). *G. colymbus*: of this rare species I managed to secure about thirty specimens; it may be easily separated from the allied forms by the distinctly and very neatly punctured interstices of the elytra, but the punctuation is so minute as to be only visible under a very powerful lens; in dull abnormal examples the punctures are not easily seen. *G. bicolor*: apparently the least common of the Norfolk *Gyrini*; about twenty examples occurred; this species comes very close to *G. elongatus*, but the more rounded outer apical angle of the elytra seems to be a constant character, notwithstanding the great variation in shape in both sexes of the two insects. Dull forms of most of these species occurred: also examples of *G. colymbus* and *G. elongatus* with the apices of the elytra testaceous or rufous (very conspicuous when the insects were alive). The *Gyrini* above noted do not include *G. opacus*, Sahlb.; Mr. Edwards, however, informs me that he has taken it abundantly in more inland localities.—Id.: *October 2nd*, 1890.

Anisotoma Triepkei, &c., at Aviemore.—While staying at Loch Alvie by Aviemore during the early part of August, I was fortunate enough to capture a male example of *Anisotoma Triepkei*, Schmidt, by sweeping in a grassy place on a fine warm evening. I also found a specimen of *Megacronus inclinans*, Er., by turning over stones at the edge of a small mountain stream. Owing to the rainy weather and the time of the year I was unable to obtain many beetles. The present summer appears to have been the wettest experienced in the district for the last twenty years, besides which, very little wood had been cut in the forest for a long time. For the names of the above beetles I am indebted to Mr. Champion, who informs me that neither of the species mentioned was met with by him at Aviemore.—R. W. Lloyd, St. Cuthbert's, Thurleigh Road, Balham, S.W.: *October 21st*, 1890.

Anosia Plexippus (Danais Archippus) at Eastbourne.—It may be worthy of record that at about 2 o'clock in the afternoon of the 2nd inst., a large specimen of *Danais Archippus* was flying for some time up and down the Marine Parade at Eastbourne. It seemingly wished to settle on the road, but was hindered by passing vehicles, and eventually went out to sea and was lost to sight. So many foreign steamers pass close to land at Beachy Head that its appearance is not difficult to account for.—A. H. Clarke, 109, Warwick Road, London, S.W.: *October*, 1890.

Chærocampa nerii near Dartmouth.—I captured a fine specimen of the Oleander Hawk-moth here, flying round honeysuckle, on the evening of September 26th just after dusk. It had been observed for several evenings previously.—HENRY F. OWEN, Stoke House, Stoke Flemihg, Dartmouth: *November 14th*, 1890.

[The fortunate captor of this rare visitor is a young gentleman aged eleven!—EDS.].

Description of the larva of Phoxopteryx upupana.—Length, about 4 or 5 lines. Cylindrical, slightly tapering towards either extremity, olive-green, dusted with olive-brown, especially so on the third, fourth, eleventh, twelfth, and thirteenth segments; spiracular region olive-green. Head black. Thoracic plate black, divided in centre, and having two black tubercles on either side of division. The anterior portion of the third and fourth segments has each a row of black tubercles; the fifth to the twelfth have each on their anterior portions a row of light glistening tubercles, and on their posterior portions two similar tubercles; the thirteenth has only one row of tubercles; all the apices are black; a single light coloured hair is emitted from each tubercle; anal plate wanting. Legs black; prolegs olive-green; spiracles black. On the ventral surface of the fifth, sixth, eleventh, and twelfth segments is a row of black tubercles.—BENJ. A. BOWER, Lee, Kent: *October 11th*, 1890.

Insects in the Scilly Isles.—I spent the first few days of October in the Scilly Isles, and took *Forficula pubescens* and *auricularia*, *Cæcilius Dalii*, *Geranomyia unicolor*, *Limnobia nitida*, *Lucina fasciata*, *Salda pallipes*, *Omosita colon*, *Bombus muscorum*, *Halictus morio*, *Tetramorium cæspitum*, *Eudorea angustea*, *Pionea forficalis*, *Phlogophora meticulosa*, *Plusia gamma*; at Boscastle *S. Janira* was out as late as October 18th, as also was *P. rapæ*.--C. W. DALE, Glanville's Wootton: *November 3rd*, 1890.

Review.

THE BUTTERFLIES OF NORTH AMERICA: by W. H. EDWARDS. Third Series, Part X. Houghton, Mifflin & Co., Boston and New York; Trübner & Co., London. 1890.

A further instalment of this magnificent work, elaborated with the author's usual minuteness as to the text, and with the same beauty and faithfulness as to the plates. Again *Argynnis* occupies a prominent position, three species receiving attention, viz., *A. Alcestis*, Edw. (with transformations, 11 figures in all), *Adiante*, Bdv., and *Atossa*, n. sp., from South California. The third plate is occupied by elaborate details for *Satyrodes Canthus*, Bdv. and Lec. (*nec* L.), including 5 figures for the imago and nearly 30 for the earlier conditions from egg to pupa. This Satyrid appears to be wide spread in North America. The author enters, in some detail, into the questions of nomenclature as concerns *Eurydice* (*Euridice*), L., and *Canthus*, L. (he wrongly quotes Syst. Nat., *ed. xiii* for the latter). It is not our province to analyze the reasons for the adoption of the name *Canthus* (Bdv. and Lec.); but we think that some will be inclined to prefer *Boisduvalii*, Harris. After stating that *Eurydice*, L., and *Canthus*, L., do not refer to a North American insect, he goes on to say that "A name in use should never be changed for an obsolete name, and the neglect to observe this common sense rule has worked a great deal of mischief," an expression of opinion that will no doubt be heartily echoed by many.

Obituary.

E. T. Atkinson, Accountant General of Bengal, and President of the Board of Trustees of the Indian Museum, died at Calcutta on Sept. 15th, after a short illness from Bright's disease. He was born at Tipperary on Sept. 6th, 1840, and passed into the Indian Civil Service in 1862. He held many important official appointments in India, amongst others that, for a time, of Financial Secretary to the Indian Government. Between 1874 and 1879 he published a Gazetteer of the North-Western Provinces of India, and was also the author of works on Indian Law and kindred subjects. As an entomologist he published two series of papers on Indian *Rhynchota* from 1885 to 1890, in the Journal of the Asiatic Society of Bengal, and a series of Catalogues of the insects of the Oriental Region. One of his latest works was a bulky Catalogue of the *Capsidæ* of the world. Furthermore, he started the "Indian Museum Notes," dealing largely with Indian Economic Entomology, which he was doing his best to reduce to something like order by collecting information from native and other sources, naturally often very crude, but of the greatest use for future working out. It is most unfortunate for this latter department in particular, and for Indian entomology in general, that he has been cut off just as he had accumulated the knowledge of what was required, and had commenced to place that knowledge to public advantage, and with remarkable energy. This energy of character asserted itself in all his official duties, and his private virtues endeared him to all with whom he came in contact. Had space permitted we would have given a detailed list of his entomological works; but think enough has been said in this condensed notice to show that a career eminently useful in the past, and promising more for the future, has been prematurely ended. We have to thank Col. Swinhoe for several particulars concerning his deceased relative.

Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: *October 20th*, 1890.—Mr. W. G. BLATCH, F.E.S., President, in the Chair.

The Rev. E. J. Nurse, 45, Francis Road, Ladywood, was elected a Member of the Society.

Mr. R. C. Bradley showed *Semasia Wœberana* from his garden at Moseley. Messrs. P. W. Abbott and C. J. Wainwright showed collections of insects taken at Porlock, Somersetshire, this year. Mr. W. G. Blatch showed a fine series of *Aetophorus imperialis* from Colchester; he also submitted a complete list of the *Coleoptera* taken at Church Stretton during a recent visit: the list included 125 species, represented by 610 specimens. A long discussion followed on the season, in which Messrs. W. G. Blatch, G. T. Baker, and C. J. Wainwright joined. The general opinion was that it had been a very bad one for insects.

November 3rd, 1890.—The President in the Chair.

Mr. P. W. Abbott showed *Gortyna ochracea* and *Nonagria arundinis* from Sutton; these had been very greasy, but had been quite cleaned by immersion in benzine; Mr. Blatch said that he had quite removed the grease from a beetle by immersion in petroline. Mr. A. Johnson showed *Pœcilocampa populi* from Sutton, *à propos* of which Mr. Thornewill said that he had known larvæ of this species come to sugar. Mr. R. C. Bradley showed a nice series of *Hypsolophus marginellus*, bred from larvæ sent him by Mr. Eustace Bankes. Mr. C. J. Wainwright showed *Zygæna meliloti* from the New Forest; also *Zygæna filipendulæ* from Stroud, several specimens of which showed more or less yellow.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—The monthly meeting was held on Monday, November 10th, 1890, in the Free Library, the President (Mr. J. S. CAPPER, F.L.S.) in the Chair.

Mr. E. C. Stott was elected a Member.

The President made some remarks on Miss Ormerod's new "Manual of Injurious Insects," a copy of which she presented to the Society's library, and said the size had been greatly increased since the last edition; there was also a portrait of Miss Ormerod, and he recommended all interested in economic entomology to procure a copy. Mr. J. Cosmo Melvill, M.A., F.Z.S., read a paper on *Hypocephalus armatus* (Desm.), one of the rarest and most extraordinary *Coleoptera*, giving an account of its structure and probable affinities, and exhibited one of the few specimens. During the conversazione the President exhibited some varieties of *Abraxas grossulariata*; Mr. Newstead, *Acherontia Atropos*, large nests of wasps, and a Coccid, *Orthezia occidentalis*, sent to him for figuring by Mr. J. W. Douglas; Mr. Gardner, Gœdart's "Metamorphosis et Historia Naturalis Insectorum," A.D. 1662; Rev. H. H. Higgins, *Apatura Pavoni*; and by Mr. C. S. Gregson, 100 varieties of *Abraxas grossulariata*, bred by him this year.—F. N. PIERCE, *Hon. Sec.*, 143, Smithdown Lane, Liverpool.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: *October* 23*rd*, 1890.—W. H. TUGWELL, Esq., Vice-President, in the Chair.

Messrs. P. J. Crane, of Chingford, and George Wallace, of Forest Hill, were elected Members.

Mr. Bouttell exhibited two series of *Eugonia quercinaria*, Hufn., one bred from larvæ fed on elm, and the other on sallow. Mr. E. Joy, bred examples and pupæ of *Plusia festucæ*, L. Mr. Tugwell, a box of *Lepidoptera* collected by Mr. Lachlan Gibb in Canada. Mr. R. Adkin, specimens of *Tortrix piceana*, L., from Surrey and Hampshire, and expressed an opinion that the species was more widely distributed than was generally supposed. Mr. Hawes, examples of *Argynnis Euphrosyne*, L., showing considerable variation in the black markings. Mr. P. Bright, two varieties of *Arctia Caia*, L., also a series of *Triphæna orbona*, Hufn. (*subsequa*, Hb.), from Forres. Mr. Bright stated he had written for further particulars of the specimen of *Vanessa* exhibited by him on the 25th ult., and which was stated to have been taken at Polegate; he understood that Mr. Weir, referring to this specimen, had expressed an opinion that it was an example of *Vanessa Milberti*. Mr. Cockerell exhibited a cocoon of *Zygæna filipendulæ*, L., from near Leigh, Essex, not uniformly yellow, remarking that sometimes the cocoons of this species were half yellow and half white or whitish. He also showed *Myzius sexcincta*, Fabr., from Long Island, and said that this species was found by Dr. Riley in the stomachs of sparrows (*Passer domesticus*) in thirty instances, thus showing that its wasp-like attributes *did not* protect it from that bird.

November 13*th*, 1890.—W. H. TUGWELL, Esq., in the Chair.

Messrs. G. Champion, of St. John's Wood, A. J. Hodges, of Highbury, and A. H. Hill, of Hampstead, were elected Members.

Mr. Wellman exhibited *Bryophila impar*, Warren, from Cambridge, and a specimen of *B. muralis*, Forst., from Folkestone, very similar to the examples of *impar*. Mr. Tugwell, a long series of *Cerastis vaccinii*, L., and of *C. spadicea*, Hb. A discussion ensued as to this exhibit. Mr. R. Adkin, examples of *Spilosoma mendica*, Clerck, bred from ova obtained by the pairing of a female of the Irish form of the species with a male of the English form; from the ova obtained only two moths emerged, both of which were males, which were neither like the English or Irish form. Mr. Adkin also exhibited specimens of *Peronea sponsana*, Fb., from the New Forest, and referred to his exhibit of this species in 1889, when nearly all of those then shown were the variety; this year he had endeavoured to obtain the species as it occurred in the New Forest, and out of some twenty specimens there were only four or five of the variety. Mr. Cockerell exhibited insects from the Wet Mountain Valley, Colorado, to illustrate parallel variation in *Diptera* and *Hymenoptera*; series 1, green to blue; series 2, yellow to red. Mr. Atkinson, a small collection of all Orders from Africa.—H. W. BARKER, *Hon. Sec.*

ENTOMOLOGICAL SOCIETY OF LONDON: *November* 5*th*, 1890.—The Right Hon. LORD WALSINGHAM, M.A., F.R.S., President, in the Chair.

Mr. Francis H. Barclay, of Knott's Green, Leyton, Essex; Miss M. Kimber, of Cope Hall, Enborne, Berkshire; and Mr. John E. Robson, of Hartlepool, were elected Fellows.

Lord Walsingham announced the death of Mr. Atkinson, of the Indian Museum, Calcutta.

Mr. A. H. Jones exhibited a number of *Lepidoptera* collected in June last near Digne, Basses Alpes, including *Papilio Alexanor*; *Parnassius Apollo*, larger and paler than the Swiss form; *Anthocharis tagis*, var. *Bellezina*; *Leucophasia Duponcheli*; *Thecla spini*; *T. ilicis*, var. *cerri*; *Lycæna argiades*, var. *corretas*; *L. Argus*, var. *argyronomon*; *L. bellargus*, var. *ceronus*; *Melitæa Deione*; and *Argynnis Euphrosyne*.

Mr. W. E. Nicholson also exhibited a collection of *Lepidoptera*, formed near Digne last June, which included very large specimens of *Papilio Machaon*; *P. Podalirius*; *Thais rumina*, var. *medesicaste*, larger and redder than the Mediterranean specimens; *Apatura Ilia*, var. *Clytie*; *Argynnis Adippe*, var. *Cleodoxa*; *A. Daphne*; *Melanargia Galatea*, var. *leucomelas*; *Vanessa Egea*, bred from Pellitory; *Satyrus Semele*, and many others.

Mr. C. O. Waterhouse exhibited the upper and lower membranes of a wing of a species of *Attacus*, which had been separated without moving the scales, and mounted on glass so as to show the internal surfaces. He explained that he separated the membranes first by inserting a needle in the vein at the base of the wing, and when they were sufficiently parted to be taken hold of, they were gradually drawn asunder, and floated on water.

Dr. D. Sharp exhibited a photograph received from Prof. Exner, of Vienna, showing the picture obtained at the back of the eye of *Lampyris splendidula*. He stated that this picture is continuous and not reversed, and shows the outlines of lights and shades of objects at a distance as well as of those closer to the eye.

Mr. H. Goss exhibited a specimen of *Zygæna filipendulæ*, var. *chrysanthemi*, which he had taken at Rhinefield, in the New Forest, on July 15th last. Mr. P. B. Mason said this variety was known on the Continent of Europe, and was figured by Hübner in his "Sammlung," a copy of which work he exhibited. He added that he possessed a similar specimen of this variety taken by Mr. Nowers in Wyre Forest, Worcestershire. Colonel Swinhoe stated that he possessed a similar variety of a species of *Syntomis*.

The Rev. Dr. Walker exhibited drawings illustrating the various forms of *Crymodes exulis* occurring in Iceland which he had shown at the October meeting of the Society; he also exhibited seven varieties of *Melanippe thulearia*, nine of *Coremia munitata*, and a few of *Noctua conflua*, illustrating the varied forms of these species occurring in Iceland. Mr. Mason said that the only British specimens of *N. conflua* which he had seen resembling the Iceland form of the species were taken at Wolsingham, Durham.

Mons. A. Wailly exhibited and remarked on a number of *Lepidoptera* from Japan. The collection comprised about thirty species, eleven of which, it was stated, were not represented in the British Museum collections.

Mr. A. C. Horner exhibited a number of rare species of *Coleoptera*, including *Homalota crassicornis*, Gyll., *H. fimorum*, Bris., *H. humeralis*, Kr., and *Euryporus picipes*, Pk., collected at Church Stretton, Shropshire; and also *Amara nitida*, Sturm, *Oxypoda amæna*, Fair., *Homalota testaceipes*, Heer, *Lithocharis apicalis*, Kr., and *Epuræa neglecta*, Heer, from the neighbourhood of Tonbridge.

Mr. Meyer-Darcis exhibited a specimen of *Termitobia physogastra*, Gangelb., a new genus and species of *Brachelytra* obtained in a white-ants' nest from the Congo. Dr. Sharp commented on the interesting nature of the exhibition.

Colonel Swinhoe exhibited a collection of moths from Southern India, which comprised about forty species. He also read a paper describing these species, entitled, "New Species of Moths from Southern India."

The Rev. T. A. Marshall communicated a paper, entitled, "A Monograph of British *Braconidæ*. Part iv."

Lord Walsingham read a paper, entitled, "African *Micro-Lepidoptera*," containing descriptions of seventy-one new species, and of the following nine new genera, viz.:—*Autochthonus* (type, *A. chalybiellus*, Wlsm.), *Scalidoma* (type, *Tinea horridella*, Wkr.), *Barbaroscardia* (type, *B. fasciata*, Wlsm.), *Odites* (type, *O. natalensis*, Wlsm.), *Idiopteryx* (type, *Cryptolechia obliquella*, Wlsm.), *Microthauma* (type, *M. metallifera*, Wlsm.), *Licmocera* (type, *L. lyonetiella*, Wlsm.), *Oxymachæris* (type, *O. niveocervina*, Wlsm.), and *Micropostega* (type, *M. æneofasciata*, Wlsm.). Several European and American genera were recorded as new to the African fauna, and the occurrence of one Australian and two Indian genera was also noted.—H. Goss, *Hon. Sec.*

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